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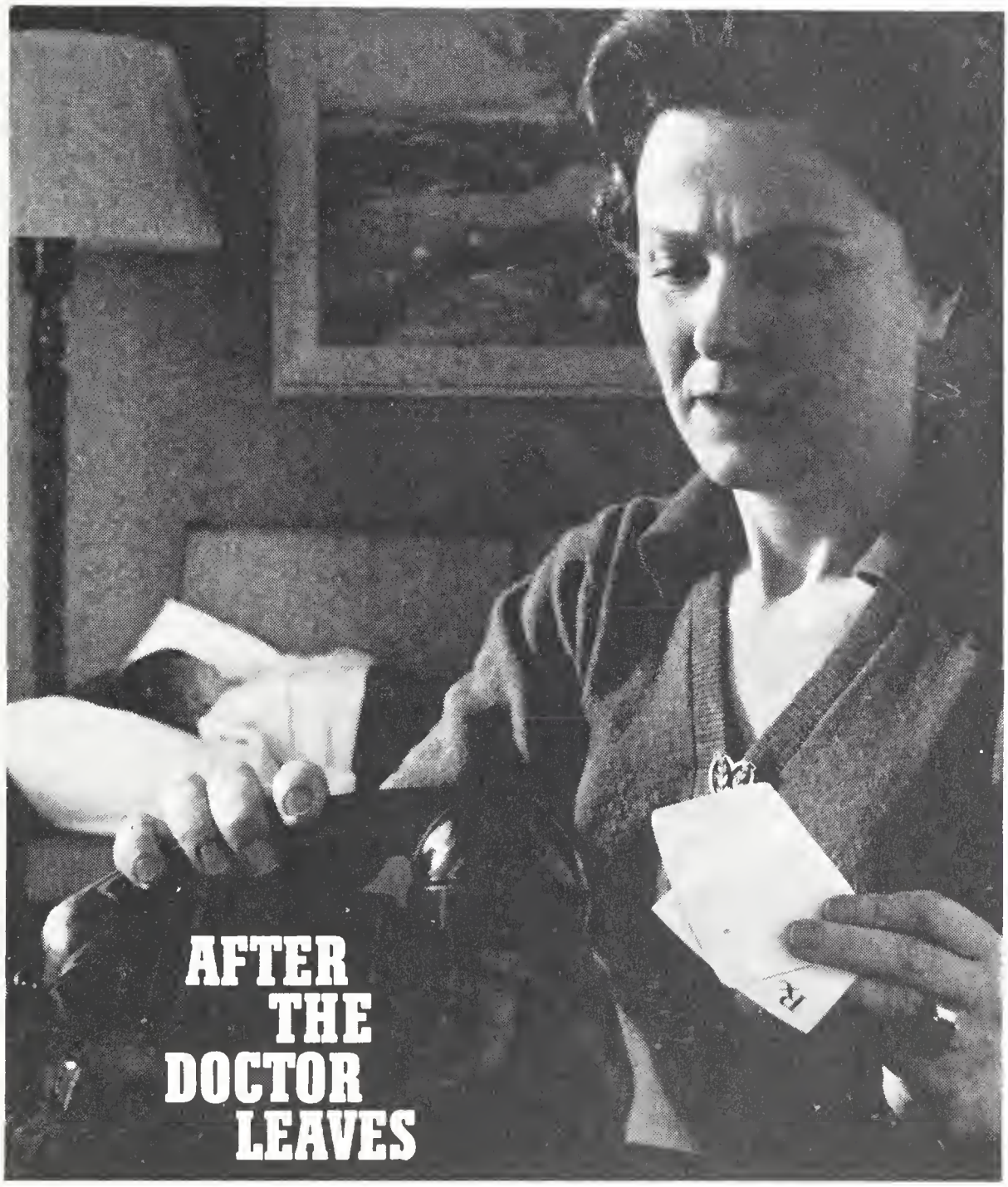

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1. Wolf, Olsen and Tyler: Obstetrics and Gynecology, Vol. 10, Sept., 1957.
2. Behne, D., et al: West. J. Surg., Vol. 64, March, 1956.

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John Banister delivering a lecture on anatomy at the Barber-Surgeons Hall in London, 1581. The red and white barber's pole is in evidence.

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Editorial

This Issue

An almost invariable consequence of the practice of medicine is the commitment to appear as an expert witness at some legal proceeding. With a certain fundamental knowledge and regard for the law, the physician can confidently appear in court and enhance his stature and professional reputation. However, too often he is ill-prepared and unfamiliar with the subtle connotations of the case, and as a result becomes involved in the legal gymnastics of some clever barrister with subsequent embarrassment to himself and to the party he represents. We have only to observe some of the sensational medico-legal litigations in the United States to impress the fact upon us. For this reason the Journal has entitled the current issue "Medicine and the Law". It would be impossible to adequately survey such a complex subject, but topics of more than usual interest and concern are presented in an attempt to stimulate thought in the vital field of Medical Jurisprudence.

G.A.M.

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Medical Jurisprudence In Toronto

by Kenneth G. Gray, Q.C., M.D. Professor of Forensic Psychiatry

The course in medical jurisprudence at the University of Toronto has been altered in the past few years so that it is now a course dealing with legal aspects of the practice of medicine. This article contains a reference to some of the topics which are discussed in the course with special reference to certain topics which are not included through lack of time. The value of the course has been enhanced by the cooperation of a number of visiting lecturers. At least three of the lectures each year are given by judges of the Supreme Court of Ontario.

Part of the course deals with legal actions against medical practitioners, often referred to as actions for malpractice. These are actions in which a patient alleges that through negligence on the part of his doctor the patient has sustained injury for which he demands compensation. Detailed information is provided in the lectures about this type of legal action with a number of suggestions about how to avoid some of these difficulties.

In addition to the liability of a doctor in an action for malpractice, it is also necessary to consider the liability of hospitals and their employees when the alleged negligence takes place within a hospital.

There is another type of legal action against doctors in which it is alleged that a doctor undertakes examination or treatment without the patient's consent. This applies particularly to surgical operations. It is for this reason that it is usual to obtain the consent in writing of a patient in the case of a major surgical operation. Some subsidiary questions arise such as the consent of a spouse and consent of a patient under 21 years of age.

Criminal liability is also included in these discussions, for example, in the case of abortion and operations for sexual sterilization.

Legal action may be brought against a doctor for performing an unauthorized post mortem examination so that it is necessary to be familiar with the law governing consent for these examinations.

About two-thirds of all the doctors practising in Canada belong to the Canadian Medical Protective Association, hence the report of this Association affords relevant information about the number of legal actions against doctors in Canada. According to the report for the year 1960-61, 62 threats of legal action were received by the Association and 16 writs were issued claiming damages for alleged malpractice.

It will be seen that relatively few legal actions against medical practitioners proceed to trial each year.

While it is important that doctors have some knowledge of the legal risks inherent in medical practice, this aspect of the subject is relatively unimportant in comparison with the role of a medical practitioner as a witness in court. A very large proportion of the cases which are tried in the courts require medical evidence. There are few doctors in practice who will not be required to give evidence as a witness during the course of their practice. It is for this reason that much of the course in medical jurisprudence deals with the function of the expert witness in the court room.

The professional witness will derive greater enjoyment from his appearance in court and will enhance the value of his testimony if he has had an opportunity to familiarize himself with the nature of courtroom procedure and his relationship to it.

It is desirable for a witness to know something about the construction of the courts in Ontario and the nature of the cases which are tried in various courts. As a beginning the distinction between a criminal and a civil action should be understood. A criminal trial is essentially a prosecution brought by the state against an individual with the object of punishing the defendant for some act of which he is accused. A civil action, on the other hand, is a trial of a claim launched by a plaintiff against a defendant for the enforcement of some civil right such as recovery of damages for injury to the plaintiff, the recovery of a debt, or damages for breach of contract.

Criminal actions are commenced by laying an "information". This is a sworn statement in which the complainant sets out the nature of the offence charged. If the offence is not serious the accused person will be served with a summons requiring him to appear in court to answer to the charge. If the offence is serious a warrant will be issued for the arrest of the accused.

A civil action commences with the issue of what is known as a "writ". This is a document prepared by the solicitor for the plaintiff containing a brief description of the cause of action.

A criminal case may be tried in magistrates' court, county court, or supreme court depending partly upon the seriousness of the offence and partly upon the election of the accused.

A civil case may be tried in a division court, county court, or supreme court depending largely upon the amount of damages claimed by the plaintiff.

In each province there is a court of appeal. In Ontario this court is located at Osgoode Hall, Toronto. The court of appeal deals with appeals in both criminal and civil cases from the trial courts.

There are two methods of securing the attendance of a medical witness at a trial. One method is to serve him with a "subpoena", a document which is a command by the court for the witness to attend. Failure to attend may result in a court issuing a warrant for the arrest of a witness who may be fined or sentenced to imprisonment for his failure to attend court at the required time. With the subpoena is served a sum of money known as "conduct money". This includes the witness fee for one day (which is $8.00 for a medical witness) and a travelling allowance which is fixed by a tariff.

The alternative method for securing the services of a medical witness is for the solicitor to consult the medical practitioner of his choice in advance of the trial. The lawyer outlines the nature of the case and invites the medical practitioner to participate as an expert witness. The fee of the medical expert is a matter to be arranged between himself and the lawyer.

Frequently the question is asked as to why a lawyer resorts to the method of securing the services of a medical expert at a higher fee when he has the power to secure the attendance of the witness by serving a subpoena for a fee of $8.00 per day. The answer lies in the nature of the services which a lawyer requires from a doctor. A doctor who is served with a subpoena is under no obligation to discuss the case before the trial with the lawyer who issued the subpoena nor to give him any information about the case, nor is the doctor under any obligation to look up any references or to do any preparation for the trial. This means that when the doctor goes into the witness box the lawyer who is calling him as a witness may have no idea what the doctor's evidence is going to be and it might turn out to be quite unfavourable to the lawyer who issued the subpoena. On the other hand, in a case where a lawyer retains the services of a doctor by agreement he will have an opportunity to discuss the case in advance of the trial and the doctor will have ample opportunity to refresh his memory if necessary with regard to the facts of the case and any opinion that he may put in evidence.

The procedure whereby a doctor gives his evidence in court is the same in both criminal and civil trials. The lawyer who has called the doctor as a witness will question him first and this is called the examination-in-chief. At the conclusion of the examination-in-chief the lawyer for the opposing side has the opportunity to question the doctor and this is called cross-examination. There is a difference in the nature of the questions which may be asked on examination-in-chief and cross-examination. One of the principal differences is that in the examination-in-chief a lawyer is not permitted to ask leading questions.

In thinking of the cases which involve the use of medical evidence, the most frequent are those in which a plaintiff is asking damages for personal injuries, particularly in motor vehicle accidents. It is obvious that medical evidence will be required in every such case. Next in frequency are the cases involving psychiatric evidence including criminal trials where mental illness is relevant as a defence or in relation to sentence and civil trials relating to custody of estates and disputed wills.

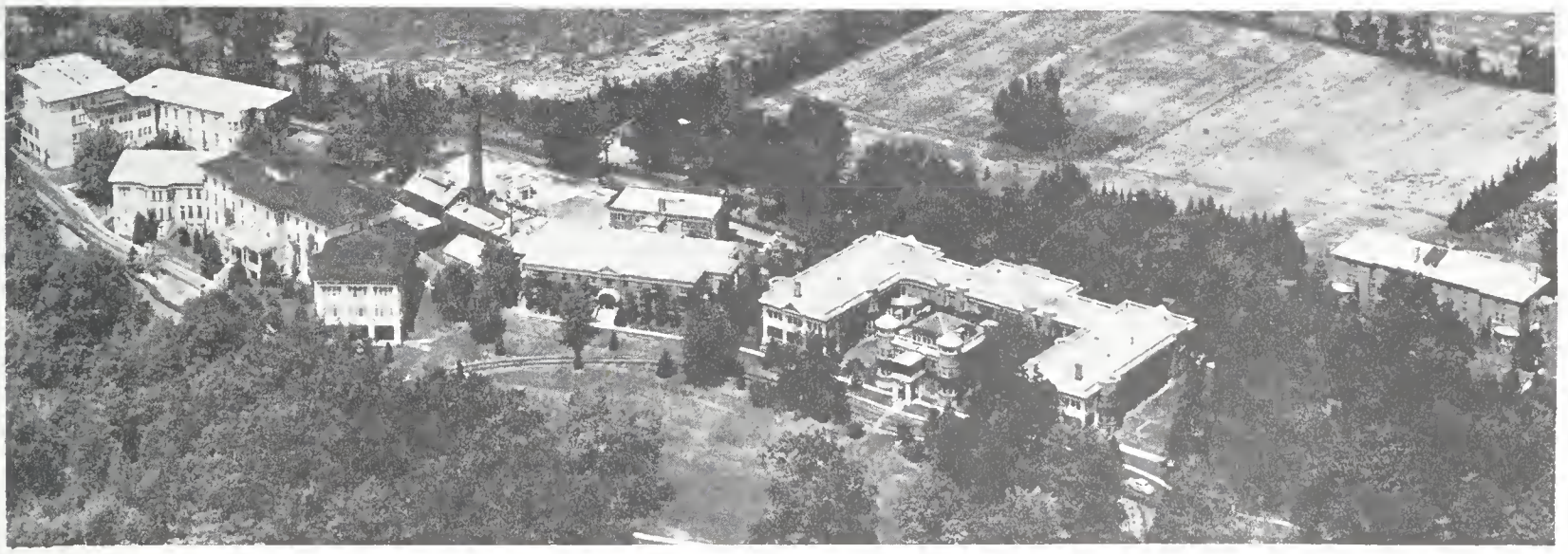
There is another type of legal action in which medical evidence may be required. These are the legal actions which arise out of family relationships such as divorce, annulment, custody of children. The only ground for divorce in Canada is adultery, and medical evidence is not usually relevant in a case for divorce. A marriage may be dissolved by annulment and one of the grounds is impotence due to either physical or psychic causes. The impotence must be present at the time of the marriage, that is to say, if a marriage is consummated even once it cannot be annulled on this

ground. It is evident that medical evidence is likely to be required with this type of legal action. A marriage may also be annulled on the ground that either spouse was unable, because of mental illness, to comprehend the marriage contract at the time of the marriage. This is a very rare type of legal action. Another legal action which arises out of the marital relationship is an action brought by a wife for maintenance. In this type of action the court is not asked to grant a divorce or annulment but is asked to award an allowance to a wife who is living separate from her husband. If there are dependent children the wife may ask for custody of the children and an allowance for their maintenance. The husband may contest the wife's right to custody and may allege that she is unfit to undertake the responsibility of bringing up the children. A doctor who has attended the family and has knowledge of relevant facts about the husband or wife may be called upon to testify. For example, a defendant husband may allege that his wife is an alcoholic and may subpoena a doctor who has attended her during bouts of alcoholism.

These are usually disagreeable cases and most doctors would prefer not to give evidence. However if a doctor is subpoenaed there is nothing he can do but attend and testify.

In this connection it should be noted that a communication made by a patient to his doctor is not privileged. This means that if a doctor is testifying he must divulge any communication made to him by a patient if it is relevant to the legal action. There has been some agitation in the medical profession to secure a change in the law so that a doctor would not be required to divulge information confided to him by a patient. Recently the State of Connecticut enacted a statute to this effect but it applies only to psychiatrists. The Medico-Legal Society of Toronto has esablished a committee which is examining this whole subject in order to see whether some change in the law might be desirable.

In conclusion, it is the writer's opinion that nine or ten lectures by judges and lawyers who are experts in the use of medical evidence plus a few appearances in the witness box will enable a medical witness to feel at ease in giving his evidence and will ensure that he can provide the court with a clear and accurate expert opinion about the relevant medical issues.



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Damages for Personal Injuries

by J. E. Graham, B.A., 6T2

It is the purpose of this paper to discuss reparations of a monetary nature to an individual who is injured through no fault of his own but through the fault of another. The remedy afforded by common law to a person who sustains personal injuries by the tortious act of another is the right to be compensated in money, and that compensation has from time immemorial been known as "damages." The awarding of damages is a complicated system of the law. The lawyer must be aware of the law, and must collect and present the evidence. The doctor's function is to be an expert witness, and to express opinion regarding the history of the lesion, and the future physical disability that the plaintiff will have. The actual amount of the damages are suggested by the plaintiff's lawyer, and the rewarding of damages are carried out by a judge or a jury.

The part played by the doctor is, therefore, to present the facts of the case. It does, however, behoove the profession to understand the workings of the law, which, by awarding our patient damages, may affect the psychological and even the physical outcome of our treatment.

The general considerations which must be taken into account are:

1. Is the wrong-doer completely responsible for the injuries?

If it is decided that the plaintiff has a certain amount of responsibility for causing his injury, the damages that will be paid will only be that percentage of the total damages that the defendant caused.

2. The damages which are awarded are not a punishment to the defendant, nor are they a reward to the plaintiff. The purpose is rather to attempt to place the plaintiff in the same position that he would be in had he not suffered the injury.

The assessment of damages falls into two categories:

(1) Special damages are those costs which have accumulated before and during the trial, such as medical expenses, and loss of pay by absence from a steady job.

(2) General damages are those which refer to the less tangible losses which may develop in the future.

What then, are the criteria that are used to assess these general damages?

(1) The extent of the bodily injuries must be considered. Thus, the loss of a toe is of much less value than the loss of a leg.

(2) Pain and suffering of the victim, both at the time of the accident and during the convalescence, are important. It may be noted at this time, that such factors as delayed union of a fracture is part of the natural history of a disease and should be recompensed. However, if an individual prolongs his convalescence by voluntary actions, this is not part of the natural history of the disease and should not be recompensed.

(3) The effect of the accident on the health of the individual in the future is certainly a difficult matter to assess, but must be done at this time.

(4) Will the accident affect the earning capacity of the patient? The loss of a thumb of a labourer is far less costly loss than the loss of a surgeon's thumb. The labourer can return to work with relatively little disability as soon as the wound is healed; the surgeon may never be able to carry on his chosen profession.

(5) The previous point leads naturally to the question of whether the individual will be able to carry on at all, or whether he will have to be supported solely by the award given to him by the court.

One might well say that these points of special and general damages are self-evident, but a grave responsibility is realized when one discovers that the decision reached in the courts is final, and damages once assessed are assessed for all time. They may not be increased in the future on any pretext. Thus, if in twenty years, the plaintiff, who

received a 'bumper' fracture at age ten, develops osteoarthritis, which requires further treatment or even forces a change of jobs, he cannot return to the courts and request further recompense. Future expenses, loss of earning power, future unemployability, and decreased ability to enjoy life must be settled at this one time. The considerations which are pertinent may even involve the decision as to whether cosmetic disfigurement will reduce a young lady's chances of marriage.

How then does the doctor present evidence, and what is his role in a trial of this sort? There is the fact that the testifying physician must be qualified, and the testimony of an orthopaedic surgeon probably will bear more weight than that of a general practitioner in a case involving a fracture. Nevertheless, it is to be noted, that the rapport of the physician in court is important, and some physicians who do not excel in the operating room may be far more valuable in the court-room than the silent surgeon. The lawyer must not only consider what the injury is, but how the jury will imagine it. The doctor testifying in a damage action should always bear in mind that he is addressing himself to a group of laymen not versed in the language of his art, and he will best serve his patient by conveying to the jury, in language which they will understand, an accurate picture of the true nature of his patient's injuries, the pain and discomfort which it has caused, is still causing, and may in all probability cause him in the future with all the consequential effects upon his earning capacity and his enjoyment of those things which make for the good life.

How much is to be asked, and who is to decide the award? The plaintiff may choose a judge, or a judge and a jury, and this is done with the realization that a jury is liable to give a more emotional decision. It is for a jury to determine the amount of damages to be awarded, if a judge and a jury are selected; it is for the judge to determine this, if a judge alone is selected. Whether the formal claim at the time of the issuing of the writ is fifty dollars, or one hundred thousand dollars, this has no bearing upon the issue and an amount may not even be suggested during the trial. The assessment is made as fair compensation for the injury in the light of the pertinent facts mentioned above.

There has been criticism by lawyers in the United States that damages awarded in Canada are too conservative, and that the fantastic sums awarded in the States are much closer to the actual damages to the individual.

Two theoretical cases will serve to illustrate assessment of damages. A young man is struck on a crosswalk by a car, and suffers a depressed plateau fracture of his lateral tibial condyle without fragmentation. This is subsequently reduced well, and after immobilization, there is no disruption of the integrity of the joint. In a second case there is severe comminution of the lateral tibial condyle due to a similar accident. The damages awarded at a panel discussion were $3000 and $6000 respectively, because of the much greater changes of the development of complications in the latter case.

One of Ontario's outstanding jurors had this to say regarding assessment of damages for personal injury: "In all assessments of damages for personal injury, where the factors of the proper allowance for pain and suffering, and probable permanent inefficiency have to be considered, the damages awarded in the end are an estimate only, and even if a higher court on reviewing these damages would have awarded a greater sum, the trial tribunal, having had all the advantages of presence at a trial, and having made an estimate, in arriving at which there has been no error of principle or no omission in considering any material element, its assessment should not be disturbed." Perfect compensation can never be awarded in these cases, but there must be some final adjudication of these matters and, in our society, we have committed this problem to the courts of our country, which we feel merit our confidence to the highest degree.

Acknowledgement:

The author would like to express his appreciation to The Honourable Mr. Justice Walter F. Schroeder and Mr. Clay Powell for their assistance in the preparation of this article.

References:

Law Society of Upper Canada; Special Features, 1958.

Book Review —

SURGERY — *A Concise Guide To Clinical Practice*, ed. by George L. Nardi, M.D., and George D. Zuidema, M.D. Little, Brown and Co., 1961, $8.50.

This excellent, comprehensive, inexpensive paperback text of general and special surgery represents a step forward in medical publishing. Twenty-three participants, almost all of whom are active on the Harvard Medical School Teaching Staff of the Mass. Gen. Hosp., have presented in their own words what they consider to be the essence of their own specialty as they practice it. It is, therefore, a clinical text, with minimal discussion of theory and experimental work. The authors have not tried to set down all they know of their specialty, but have set down the guy-wires which lead to more comprehensive knowledge. By the same token, more comprehensive knowledge already possessed could be organized and recalled by a perusal of the book. Thus it is an excellent book for final year students, M.D.'s studying for Board or Council exams, and even those candidates reviewing surgery for certification or Fellowship exams in other than the General Surgical field.

The presentation varies with the author, from lucid paragraph writing to clear table and point form. The headings are double-spaced and underlined for rapid reference and organization. The line drawings are frequent, well-done and illuminating. Reference lists are short but recent, and invaluable for expanding the readers' knowledge of any section. The index is adequate. Especially recommended are the chapters on Urology and Gynaecology. As well there are excellent chapters on such usually omitted topics as diagnostic radiology, the use of radio-active isotopes, radiation therapy, cancer chemotherapy, and the psychological and legal aspects of surgical practice.

In summary, this book achieves its aim — an inexpensive, comprehensive, up-to-date, and practical guide to the clinical practice of surgery. It can be highly recommended.

A.S.B.

Fundamentals of Gynecology. By Samuel J. Behrman and John R. G. Gosling. Price $9.50. Pp. 405. 160 black-and-white illustrations and colored frontispiece. New York. Oxford University Press. 1959.

Medical students are notorious for their tireless search for 'pearls' and 'concise summaries', as witness the success of the Aids series. There is a certain justification for this attitude, and the value of a well-organized text or set of lectures, with proper emphasis on important features is unquestioned.

This book is just such a volume. The essential feature of it is the organization, which is indeed based on an outline of a lecture course given by the authors to medical students at the University of Michigan. Beginning with a section on normal anatomy of the female pelvis, the discussion moves then to abnormal anatomy — uterine displacements and the oft-related problem of urinary incontinence. A similar pattern of considering and explaining, the pathological in terms of the normal gone awry is followed in the section on menstrual disturbances. Another important factor in the presentation is the inclusion of a practical procedure of differential diagnosis of the various conditions, starting with the chief complaint, and working up to a provisional diagnosis by the use of clinical and/or laboratory differential points. This is especially valuable for the student, who has been taught to think from disease to symptoms and signs, and so often finds difficulty when first confronted with the problem of reversing the process.

The illustrations include several line-drawings which are commendable for their simplicity and clearness. They are pertinent and provide a valuable addition to the text.

Although the scope of the book is limited by its nature (the term "Fundamentals" in the title is apt), the material is presented in such a clear, organized and logical fashion, that this book will be extremely valuable to the student.

A.F.D.C.

ABSTRACT: *Uterine Distention and Pre-Eclamptic Toxemia*. F. Benjamin, and C. J. T. Craig.

Among the many suggested etiological mechanisms of pre-eclampsia, one which is often mentioned is renal ischemia, caused by uterine distention and mediated by the utero-renal reflex. The authors present two cases from their own experience where severe pre-eclampsia was noted in extra-uterine pregnancy, and rapidly subsided following delivery of the baby. In both these cases (both late abdominal pregnancies) it is noted that there is no element of uterine distension. Hence, the authors conclude the utero-renal reflex is a false concept in the pathogenesis of at least some cases of pre-eclampsia. The failure of some workers to reproduce the original results of renal ischemia on the basis of uterine stretching in dogs is also cited as evidence against this mechanism.

The authors further point out that placental ischemia from uterine stretching is also an untenable stand on the question.

A.F.D.C.

Case No. 2

R.R., Boy, Age 11 years. This boy was admitted to the Hospital for Sick Children on the 10th of March, 1961 with a three week history of: intermitten fever, a dry cough (with no precipitating factors), "noisy" respiration (most marked when asleep), intermittent fever, anorexia and questionable weight loss. He was perfectly well until 4 months prior to admission, from which time he had been continually tired (this was noted especially by his school teacher). Physical examination showed a 67 lb. boy, 52 inches in height, appearing somewhat pale and asthenic, but in good general health. There was slight cervical, axillary (L>R), and inguinal lymphadenopathy. Clinical and x-ray findings confirmed the presence of mediastinal widening (L>R) and a bilateral pleural effusion. The liver was palpable 2 cm. below the RCM and the spleen was palpable 1 cm. below the LCM. A biopsy of the (R) axillary lymph nodes showed an overall appearance typical of lymphosarcoma, probably of the lymphocytic type. The follicular pattern was completely effaced by moderate uniform round cells, slightly larger than lymphocytes. He was treated with ACTH for 4 days and the pleural effusion cleared completely. Following this he received 2 days of nitrogen mustard therapy (6 mg. a day) after which he felt markedly improved. This was followed by a 5-day course of deep x-ray and of x-ray to the (R) axilla. His symptoms had cleared completely by 21 days after admission and at this time the chest x-ray was completely negative. After a 32 day stay he was discharged taking 2½ mg. of methotrexate daily.

He remained clinically well and participated actively in sports following his discharge and up to 2 days before his next admission 14 weeks later. For 2 days prior to admission he had been fatigued and had been vomiting. Examination revealed a quiet, well nourished alert, 68 lb. boy. Fundi were normal. Clinical chest findings were negative, although x-ray showed slight mediastinal widening. There was multiple lymphadenopathy. The tourniquet test was positive, he had petechiae on both legs, there were multiple bruises and he had excoriated macular lesions on the shoulders and legs (at this time the platelet count was 6,000). The liver was palpable 2 cm. below the RCM and the spleen was palpable 3 cm. below the LCM. At this time the blood picture was: Hb 10.7 G.%, WBC 16.2x10^3. Diff: Neut. 9%, Bands 7%, Lymph. 52%, Immature Lymphs. 13%, Eo. 3%, Metamyelocytes 4%, Myeloblasts 3% and Undifferentiated Blast Cells 9%. On admission the methotrexate was discontinued and he was placed on 40 mg. of prednisone and 1G. of potassium chloride a day. His vomiting stopped. By 8 days after admission his bruising had cleared, the spleen was not palpable and he was feeling clinically well. After 11 days he was sent home taking 20 mg. of prednisone and 75 mg. of 6-mercaptopurine a day. Clinically he did well and gained 10 lb. in the 2 weeks after discharge (while he was still on prednisone). Then the dose of prednisone was gradually decreased and it was discontinued.

He was readmitted to the Hospital for Sick Children 10 weeks after discharge with a 2 week history of being listless, tired and anorexic, with recurrent headaches (frontal and occipital) aggravated by light, especially the sun at noon. His vision had been blurred for 1 week (L>R). Five days before admission, while at school, he had a "faint" spell. From then to the time of his admission he had similar recurrent "faint" spells, although he never fell or had any visual or auditory disturbance. He had been almost constantly nauseated for 5 days and had eaten many very small meals during the day. He slept poorly and he noted pain bilaterally at the angle of the jaw. Two days before admission his mother noted a (L) facial weakness (particularly when he smiled). On examination, he appeared chronically ill, but moderately well nourished, weight 70½ lb. Funduscopic examination showed blurring of the nasal borders of both optic discs with early papilloedema on the (L) side. There was venous engorgement in both retinae (R>L) and his visual acuity was decreased (L>R). He showed a (L) seventh cranial nerve paresis of the lower motor neuron type. The tip of the spleen was questionably palpable. He had (L) posterior mandibular, upper cervical, submaxillary, (R) supraclavicular and (L) axillary lymphadenopathy. Gait was normal, but when he was sitting up, there was a tendency for him to fall in any direction. He had slight dysmetria (which showed upon the finger-nose and heel-shin test). Skull x-rays were normal. Hematology was: Hb 10.1 G.%, WBC 2.9x10^3. Diff: Neut. 56%, Bands 5%, Lymph. 22%, Eo. 3%, Mono. 14%. Plat. Count: normal.

The dose of 6-mercaptopurine was increased to 100 mg. a day and he was given a 10-day course of x-ray therapy to skull, (L) cervical and (R) supraclavicular areas. Within 2 days his vomiting had cleared and visual acuity and strength of the (L) seventh cranial nerve were somewhat improved. Within 5 days of admission he was able to read and watch television. His headaches had entirely

cleared. The (L) disc still had a blurred margin and the nasal border of the (R) disc was still slightly blurred. He was discharged after a 9 day hospital stay, with the recommendation that he be followed in the outpatient clinic.

Discussion

Malignant lymphomata are rare in childhood (the peak incidence being in the 4th and 5th decades) but when they do occur, males are more commonly affected than females. The types of lymphosarcoma are:

(a) Giant follicular.
(b) Small cell or Lymphocytic.
(c) Large cell:
  (1) Lymphoblastic.
  (2) Reticulum cell.

This patient is thought to have lymphocytic lymphosarcoma. This form of lymphoma is closely related to chronic lymphatic leukemia with periodic increases in circulating lymphocytes (as we demonstrated in this case). Even with therapy, the course of the disease is progressive and it is usually fatal wthin 12 months of onset. The principle forms of therapy are:

(a) Radiotherapy.
(b) Cytotoxic Agents (useful in children, of little use in adults).
  (1) Alkylating agents eg. nitrogen mustard.
  (2) Antimetabolites:
    1. Folic acid inhibitors eg. aminopterin and methotrexate.
    2. Competitive inhibitors which prevent conversion of inosinic to adenylic acid eg. 6-mercaptopurine.
    3. Those reacting competitively with glutamine eg. azaserine and diazo norleucine (DON).

Most of these agents control the disease for a limited period of time only and then another must be substituted. Usually the initial agent is effective again at a later date. However, ultimately the tumor will become insensitive to all the agents.

(c) Steroids:
These control constitutional symptoms, eg. fever, malaise and anorexia and may cause a decrease in the size of the tumor mass.

Summary

This is a case of lymphosarcoma of the lymphocytic type occurring in an 11 year old boy (usual incidence is 40 to 60) with a typical insidious onset. It serves to demonstrate the temporary remissions which may be obtained from the different thereapeutic agents, but the ultimate progressive nature of the disease.

D. W. Strangway 6T2

Acknowledgement:

I wish to thank Dr. H. Bain of the Sick Children's Hospital for permitting me to present this patient of his and for his assistance in the preparation of the article.

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Toronto, October 30, 1961 —

Dr. D. M. Whitelaw of Vancouver has been appointed physician-in-chief and head of the department of medicine of Princess Margaret Hospital, M. W. McCutcheon, chairman of the Ontario Cancer Institute, announced today. Concurrently, the University of Toronto announced Dr. Whitelaw's appointment as associate professor of medicine. He has been senior physician Vancouver General Hospital and medical director of its outpatient department and also professor of medicine at University of British Columbia and medical consultant to the B.C. Cancer Institute and Shaughnessy Veterans Affairs Hospital.

A graduate of McGill, he did post graduate work in Boston, Montreal and Toronto. During the war he served as a Surgeon Lt. Commander. He is a fellow of the Royal College of Physicians & Surgeons and a member of a number of other professional organizations and has published many professional papers as well as lecturing in Canada and internationally.

"Undoubtedly Dr. Whitelaw will make a great contribution to the growing work of the Princess Margaret Hospital in the treatment of cancer," Mr. McCutcheon commented.

Insanity and Criminal Responsibility

by D. C. N. Howse, B.A., 6T2

The purpose of this article is to review some of the present day law in Canada with respect to mentally ill persons who have been charged with a criminal offence. In almost all cases in which there is a question as to the presence and degree of mental illness in an accused person, the courts will depend on the testimony of an expert witness. He may be a general practitioner, familiar with the patient's mental state previous to the commission of the crime, the prison doctor, familiar with the patient's behaviour after arrest, or a psychiatrist brought in as a consultant, to examine the patient and report on his present mental state. Since any doctor may be called to testify in such a case, it is important to understand some of the law dealing with this problem.

Historical Background

Ancient treatment for insane persons included torture, chaining, expulsion from society and death. However as early as the time of Edward III (1350) it was recognized that these persons should not be held responsible for criminal actions, although this applied only to grossly psychotic persons. (A madman — "... one who does not know what he is doing, who lacks in mind and reason, and who is not far removed from the beasts".1) In 1723 in England it was declared that for an accused to escape punishment he "must not know what he is doing . . . no more than a wild beast." Progressive changes appeared with a liberalization of the laws and the appearance of such concepts as the ability to distinguish between right and wrong, presence of delusion, absence of criminal intent.2 It was in 1843 however, that a sensational murder trial of the killer of a high government official, a paranoid person named Daniel McNaghten, led to the formulation of the McNaghten rules. These rules are still the law in the United Kingdom and in 29 States, and in 17 other States they are used in conjunction with the Irresistible Impulse test. The essential parts of these rules are:

Definitions

For a person to be declared insane and therefore not responsible for a criminal act, that person must:

> "be labouring under such a defect of reason, disease of the mind, as not to know the nature and quality of the act he was doing, or if he did know it, he did not know he was doing what was wrong."

and, if a person has delusions, and is in other respects insane, and acting on the basis of these delusions commits a crime:

> "he must be considered in the same situation as to responsibility as is the facts with respect to which the delusion exists were real."3

It should be emphasized that these are not a test for mental illness, but of responsibility in law for a criminal act. Thus when an individual is declared "not guilty due to insanity" this is not an attempt at a medical diagnosis, but a decision that that individual at the time of committing a crime, was suffering from mental illness of such a nature and to such a degree that he could not properly be held responsible for that crime.

The Role of the Physician

The advice of the medical practitioner may be used at any one of four stages of administrative justice.

Investigation of a crime.

Medical advice is often very helpful to police. In the case of a minor offence, particularly if the offender is obviously disturbed or incompetent, police may decide not to prosecute if they can be satisfied that the individual's and the public's safety will be maintained. A good example is that of suicide, which is rarely prosecuted now. While there is no basis in law for this practice, it is frequently used with obvious benefits.

The above practice of course is limited to unimportant offences.4

After a charge has been laid or during the trial.

The question of whether the accused is fit to stand trial may be brought up either by the de-

fense, the prosecution, or the presiding judge or magistrate; and a psychiatric examination may be ordered under section 451 of the Criminal Code. The determination of criminal responsibility is different from the determination of fitness to stand trial. This involves the mental state at the time of the trial. The accused must be able to understand the significance of the trial and its proceedings. (That is, he must comprehend the charge, the evidence, the oath, and be able to instruct his counsel.13) It is with this criteria in mind that the psychiatric examination is made. It is not the medical expert who decides upon the fitness of the accused to stand trial. The report of the examiners is made to the court, and it is the court, (judge, magistrate, or jury depending on the case), acting on the basis of the medical report who makes the decision. If the prisoner is declared to be sane the trial proceeds normally; if he is declared to be unfit, he is committed to a mental hospital. If at some future time he is found to be fit to stand trial, he is returned to the court to be tried. It should be noted that the determination that a person is fit to stand trial in no way excludes the possibility that the accused may later be found not guilty due to instanity.

The defense of insanity to a criminal charge.

While it is theoretically possible that insanity may be used as a defense to any criminal charge, in practice it is limited to the most serious offenses, particularly murder, which carries only one sentence, hanging. If the plea of insanity is successful the accused is detained at the pleasure of the Lieutenant-Governor and this usually means life detention in a mental hospital (though not necessarily).

The present law regarding responsibility for crime in Canada is outlined in the Criminal Code, Section 16, which reads:

> 16. (1) No person shall be convicted of an offence in respect of an act or omission on his part while he was insane.
>
> (2) . . a person is insane when he is in a state of natural imbecility or has disease of the mind to an extent that renders him incapable of appreciating the nature and quality of an act or omission or of knowing that an act or omission is wrong.
>
> (3) A person who has specific delusions, but is in other respects sane, shall not be acquitted on the ground of insanity unless the delusions caused him to believe in the existence of a state of things that, if existed, would have justified or excused his act or omission.
>
> (4) Every one shall, until the contrary is proved, be presumed to be and to have been sane.

The original Canadian law was drawn up in 1893 and amended to its present form in 1955. The similarity to the McNaghten Rules is obvious. However, it is the difference between these two standards that, in the words of the Royal Commission set up in 1956 to study the law of insanity as a defense in criminal cases, ". . . goes to the very root of the determination of criminal responsibility".7

The most important difference occurs in the use of the word "appreciate" in subsection (2), (". . . incapable of appreciating the nature and quality of an act",) whereas the McNaghten Rules use the word "know", (". . . not to know the nature and quality of the act"). While the difference between "appreciate" and "know" may at first appear to be minor and argument about it quibbling, this difference is in reality quite important. The New Oxford Dictionary defines "appreciate": "— to estimate aright, to perceive the full force of, — esp. to be sensitive to, . . . any delicate impression or distinction." Thus one must more than "know" (. . .— be cognizant of [a fact]) the nature and consequences of his act. "There must be an appreciation of the factors involved in the act and a mental capacity to measure and forsee the consequences of the violent conduct." With the term "know" the criterion is solely cognitive and no reference is made to emotional or other factors. Accordingly it is seen that the Canadian law takes into account the fact that there are a number of mental diseases in which the cognitive aspects of the mind remain relatively intact while the emotional aspects may be quite disordered, producing abnormal behaviour (melancholia, some types of schizophrenia, and paranoia).8

The term "wrong" in subsection (2) should be taken to mean wrong "in the sense that it was something (the accused) ought not to do and for which he would be condemned in the eyes of his fellow men", and should not be taken to mean merely legally wrong.

Subsection (3): This has come under criticism in medical circles because it is felt that it is impossible for a person to have "specific delusions" and yet to be in other respects sane. It was felt

by the Royal Commission that any defense that could be raised under subsection (3) could also be raised under subsection (2) which means that delusions would reflect mental disease rendering the accused incapable of appreciating the nature and quality of an act.[9]

Infanticide. If a mother causes the death of her new-born child, while her mind is disturbed from the effects of birth and subsequent lactation, she may be charged with infanticide and not murder. (Sect. 204 C.C.). The test in this instance is less rigid than that of Sec. 16. It requires the defense to show only: ". . . her mind was then disturbed."

Irresistible Impulse. This is a dectrine used in 17 states and in American Military Law, and was recommended for adoption by the United Kingdom by the Gower Commission (1922) (but was not enacted by Parliament). It may be stated thus: A person cannot be held criminally responsible for an action if that act "is committed under an impulse which the prisoner was by mental disease in substance deprived of any power to resist." In Canada this is not an acceptable defence. There are a number of criticisms which are used. (a) This covers only a small number of crimes, involving sudden episodic behaviour, and does not cover a great many characterized by brooding and cool calculation (as in paranoid psychosis or paranoid schizophrenia). (b) It may be very difficult to decide whether an impulse was irresistible or resistible but unresisted. (c) It may be difficult to prove the impulse originated in mental disease.[11] However, while irresistible impulse is not a defense *per se,* it is felt that in true cases the defense may be successfully made under subsection (2) because an impulse of such a nature that an individual was powerless to resist it should also make him incapable of appreciating the nature and quality of that act and on this basis could not be held criminally responsible.

Provocation. In a case of culpable homicide, the charge may be reduced from murder to manslaughter, if it can be shown that the accused was acting as a result of a "wrongful act or insult" that would be sufficient "to deprive an ordinary person of the power of self-control". (Sect. 203 Criminal Code.[14]) The standard is that of the ordinary reasonable man and what he would do in similar circumstances. Thus the question of provocation does not involve a consideration of mental illness at all. The jury must first of all decide on the degree of provocation and then decide what an ordinary man would do in similar circumstances. It is no defence to say that as a result of mental illness a man's capacity for self-control is diminished.[12]

Sentence.

Upon conviction for a criminal offence the offender will be sentenced. Medical testimony is frequently taken into consideration in the formulation of a sentence. The offender is put on probation, and a condition of the probation is that he undergo medical treatment.

Summary

An attempt has been made to review some of the law with respect to mentally ill persons charged with a criminal offence, especially with reference to the legal criteria regarding fitness to stand trial, and the standards of criminal responsibility.

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ABSTRACT: *Carbon Monoxide Poisoning: Management with Hypothermia.* P. H. Lorhan and H. A. Brookler: Anesthesia and Analgesia . . . Current Researches, 40: 5, 1961.

Carbon monoxide is a potent poison, by virtue of its affinity for haemoglobin (several hundred times that of oxygen), resulting in the formation of carboxyhaemoglobin in the blood of the victim who inhales the gas. Thus, depending on the severity of the poisoning (a function of the concentration of the gas, duration of exposure, respiratory rate and minute volume, oxygen demands of tissues and haemoglobin concentration), the victim is subjected to a deficiency in the supply of oxygen to his tissues, — that is, anemic anoxia.

A case is reported of a 28 year old woman who was poisoned by carbon monoxide, and treated with tracheostomy, 100% oxygen with assisted ventilation and hypothermia. In four days the patient regained consciousness. Hypothermia was discontinued after seven days, and the patient was discharged in three weeks with some residual psychological effects — irritability, forgetfulness and a tendency to ingression. Otherwise, she was adjudged none the worse.

The authors emphasize the importance of adequate oxygen in the atmosphere provided, with artificial respiration measures if necessary to obtain good ventilation. In addition, hypothermia, by slowing metabolism narrows the gap between oxygen supply and demand.

A.F.D.C.

Malpractice

by James Paupst B.A., 6T2

Many articles and editorials, concerning the subject of the physician and professional liability, are scattered through the medical literature. There is a certain amount of confusion in defining the position of the physician before the law. Frequently the debatable points of law as related to medicine are not resolved. Solutions are therefore offered without the lucidity apparent in other areas of jurisprudence.

Definition

The term malpractice has been defined (from Black's Law Dictionary) as "bad, wrong, or injurious treatment of a patient professionally, resulting in injury, unnecessary suffering or death to the patient and proceeding from ignorance, carelessness, want of proper professional skill, disregard of established rules or principles, neglect or malicious criminal intent." Malpractice may be civil or criminal. Criminal malpractice denotes a violation of penal law in the management of a case and the physician thereby is rendered liable to prosecution by the State.

This article will only deal with civil malpractice. In this instance, the physician has inflicted injury or death upon a patient by his treatment, but is not in violation of any statute of criminal law. The state may not prosecute him, but he may be sued in civil court for malpractice.

The Four D's

Gonzales[2] and others have formulated four conditions which must be proven in order for a malpractice action against a physician to be a valid court action. In their logical order, they are:

Duty. It must be shown that there existed, in fact, a duty to the injured person (hereafter known as the plaintiff) from the doctor (hereafter known as the defendant) . The existence of the physician-patient relationship, in itself, creates a duty to exercise that degree of care, diligence and skill which other physicians would exercise in the same or similar circumstances. (The reader should keep this condition of duty in mind, when professional obligations are discussed later in the article.)

Dereliction. A dereliction of the duty must be established. Did the physician apply to the therapy of the patient, the knowledge, skill and judgment which the average physician in the same community would use under similar circumstances? Any deficiency in professional knowledge or skill must be proven in court by expert medical testimony, except in those unusual cases where the court has determined from the mere fact of the injury itself, a jury can infer negligence on the physician's part. This doctrine is known as *res ipsa loquitur.* It has been applied in those situations where the court has concluded that either the injury, or the circumstances of the injury were such as do not occur, unless someone has become negligent, and that it has been caused by an agency or instrumentality within the control of the defendant, and not due to any voluntary action or contribution on the part of the plaintiff. Under such circumstances, the jury is permitted to infer that the defendant was negligent *even though there is no direct proof of his negligent acts.* (Italics are the author's.)

Direct Causation. A direct relationship must be established between the damage or injury sustained by the patient and the lack of adequate skill or the presence of negligence displayed by the defendant in his diagnosis and/or treatment. As Jetter points out: that as a result of negligence, harm to the patient has resulted. The events must occur in sequence and be related. That a physician has been negligent means nothing in itself; the alleged negligent act must have led definitely to injury.

Damage. In most jurisdictions it must be established that some physical damage or injury was sustained by the plaintiff. Mental duress or damage unaccompanied by physical injury is not sufficient to permit a recovery for damages.[6]

After consideration of the above conditions several questions must be answered:

> What are the obligations of the physician upon assuming professional care of a patient?
>
> What are the circumstances incident to which the physician assumes legal obligation for the care of the patient; and those by which the physician-patient relationship is determined?

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What is the responsibility of the physician for the acts of others?

The physician is *not* required to treat a patient. Once he undertakes care, his legal duties are established by a combination of common and statutory law. In brief, states Jetter, "the physician guarantees that he possesses a legal licence to practise medicine; that he possesses skill and knowledge equivalent to that possessed by other physicians in his community; and he will act in good faith and according to his best judgment; keep abreast of medical knowledge and utilize only accepted methods of treatment."

Establishment of the Physician-Patient Relationship

This is established more often by implication than by spoken or written consent as when the doctor is called to the home. This type of tacit agreement is as binding as when it is definitely agreed upon verbally or in writing.

The professional relation is also established when services are rendered free.

Regarding emergency treatment, the rulings have been different, but, in general, the physician is required to give only first-aid treatment. After this, the relationship is terminated. However, in the emergency, the physician is required to continue attendance until the patient is no longer in danger, or has been placed in other hands.

Termination of Physician-Patient Relationship

This occurs when the patient has recovered or improved sufficiently so that further care is unnecessary. The physician need not take care of a previous patient for a new illness. Termination occurs also when the patient discharges the physician, when there is mutual agreement between physician and the patient to discontinue treatment.

The physician can discontinue treatment legally by giving sufficient notice, and continuing care for a reasonable time thereafter.

By *abandonment* is meant the failure of the physician to continue care when the physician-patient relationship has not been cancelled. Gross *abandonment* needs no explanation as in the case of the physician who agrees to make a call and then does not do so.

If it can be shown that the physician made insufficient visits, and that as a result the patient suffered, the physician may be held liable.

Responsibilities of the Physician for Acts of Others

The physician does become responsible for acts of others as follows:

1) All acts at all times of his paid employees (e.g. nurses and technicians).

2) All acts of his partners in group medical practice.

3) All acts of his assistants (hospital medical officers, nurses, etc.) even though not directly employed by him when these acts were done with his *immediate supervision and in his presence*.[1]

Negligence

Negligence has been defined by Dr. K. Gray in *Law and Practice of Medicine*[8] as the "omission to do something which a reasonable man guided upon those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man would not do."

Jetter divides negligence into substandard medical practice and a second diversified group in which, in some way, the physician has "infringed upon the personal rights of his patient".

Included in the first group are the following examples of *failure to use accepted methods of diagnosis*: a) not using x-rays in the case of musculo-skeletal injuries, b) not doing a biopsy when indicated, c) not using simple laboratory tests (blood sugar determination to differentiate diabetic from insulin coma), d) improper diagnosis (removal of a pregnant uterus with a preoperative diagnosis of uterine fibroid, no laboratory test for pregnancy having been done). *Insufficient attention; failure to call a specialist when this is indicated* — is also included.

When a physician fails to use an accepted method of treatment he commits negligence. An example is omitting to give tetanus antitoxin in a case of a crushing injury.

Misrepresentation. The physician must let his patient know the true situation, and if his condition prevents this, the nearest of kin should be informed.

The second group contains a diverse group of

negligent professional acts which, in some manner, the physician has infringed upon the personal rights of the patient. "Personal rights" is a term of vague importance, but the topic of *consent* is extremely prominent. This will not be discussed here, but the physician must have an intimate knowledge of the rules governing consent to save himself exposure to negligence.

Professional Liability

It would appear on the surface that a malpractice action against a physician is no easy task. Such is not always the case. At present this circumstance is being reversed. The interpretations have been liberal and the application of the doctrine of law known as *res ipsa loquitur*[4] places a heavy burden on the physician faced with a suit.

It is basic in law that he who accuses must prove, it being easy to accuse and most difficult to defend. Such proof must be by expert medical testimony and not by jury speculation. *Res ipsa loquitur,* R.I.L. refers to untoward events not ordinarily occurring in the absence of negligence. In such instances, the defendant physician is presumed responsible, the lay person being regarded competent to recognize that a negligent act has been done. When an act of negligence has occurred, and caused injury, (foreign bodies left in tissue after operation), the plaintiff deserves compensation for ethical and moral reasons.

However, if the plaintiff's attorney can apply the doctrine of RIL, the onus is on the defendant to prove his innocence. There is criticism that RIL is being applied without justification. The fallacy in the extension of this doctrine is that whenever a bad result follows some medical procedure, the other requirements for the application of RIL come into play. The courts presume that the reason must be some negligence on the part of the physician. This results in entitling a jury to weigh and to speculate without expert proof, between the defendant's explanation and the natural sympathy for the injured plaintiff.[6]

Dean Wright, University of Toronto Law School has written in the *Cases on the Law of Torts*[9] in the section on RIL:

> "If, as Main said, substantive law was in the early days, secreted in the interstices of procedure, it is no less true to-day that, under the guise of procedure, courts are able to shift imperceptibility into forms of strict liability while speaking the language of negligence."

One may postulate many reasons for the present status of liability claims against physicians. An inaccurate knowledge of the principles of malpractice is a conspicuous cause. Dillon[5] and others feel that there is an overflow from personal injury claims in other areas (e.g. automobile accidents). And finally Regan[3] comments that some patients expect a perfect end result, and without it they become potential plaintiffs.

No physician regardless of his excellence, or the purity and the benevolence of his motives, is immune from malpractice actions.

Summary

Part 1) Introduction: The confusion surrounding law of liability concerning the physician.

Part 2) The definition of MALPRACTICE.

Part 3) The 4D's: duty, dereliction, direct causation and damage. The plaintiff's obligation to prove these.

Part 4) The obligations of professional care. Included here:
- a) The establishment and termination of the physician-patient relationship,
- b) responsibilities for acts of others.

Part 5) Negligence; its definition and the acts that the defendant may omit or commit in regard to it.

Part 6) Professional liability and Res Ipsa Loquitur. Why there are increasingly successful numbers of claimants.

Part 7) References.

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The Forensic Clinic, Toronto

by David Appert 6T3

Historical Development

In the winter of 1955-56 there was much concern in Toronto about sexual deviation. Both the public and press were most alarmed about sexual assaults on children which had resulted in the deaths of three youngsters during that time. As a consequence, one of the Toronto newspapers sponsored, in January, 1956, a forum headed by a panel of four doctors — psychiatrists — with extensive experience in the fields of sexual deviation and penal reform.

The result of this public meeting was the recommendation by a special committee, strongly supported by the Parents' Action League, for the formation of a forensic clinic. In May, 1956, the Forensic Clinic, Toronto, was established as a new out-patient division of the Toronto Psychiatric Hospital.[1]

The clinic is a unit in the Ontario Department of Health — Mental Health Branch, and was established under provision of the Ontario Mental Hospitals Act.* As a division of the Toronto Psychiatric Hospital, it is affiliated with the Department of Psychiatry of the University of Toronto.** The clinic is an expansion of the forensic services of the Toronto Psychiatric Hospital which, since 1926, has been receiving patients on remand for mental examination by order of the courts.[2] As a community mental health clinic of the Ontario Department of Health, there is no charge for the services provided.

Forensic Medicine and the Law

Forensic psychiatry is the application of psychiatry to legal problems.[3] "The history of law shows a gradual substitution of purely punitive and cruel procedures towards criminals for more humane procedures within the framework of the society's acceptance." Instead of punishment to suit the crime, there is a swing towards punishment to suit the criminal. "Law recognizes the need of contemporary knowledge of human behaviour and foresees the introduction into the trial proceedings knowledge not necessarily subject to scientific testing, but quite often controversial in the form of opinion evidences; wisely restricting this to persons thought to possess a specific knowledge of a respective field." The evidence of a duly qualified medical practitioner, be it in the proving of certain facts or simply in the offering of an opinion predicated on evidence given by other witnesses, may be regarded by the courts as something quite special and of singular merit. Because of the unique character of the Forensic Clinic with respect to the courts of law, the clinic may be envisaged as one of the auxiliary means of establishing justice.[4]

"It is an universal legal maxim that, in order to constitute a crime, there must be the *mens rea*: the guilty mind; an intent to commit a wrong. Concurrently, there also must be some activity towards the completion of this intended act."[5] The mere thought of committing an act which is illegal does not constitute an indictable crime. The clinic is designed to cope with both the above problems: those where one has committed an act constituting a crime; those where one might commit an act constituting a crime. It is hoped by the clinic that the interests of society as well as the rehabilitation of the accused person or potentially accused person are better served by providing psychiatric treatment as an alternative to imprisonment or possible imprisonment in selected cases.

Source and Diagnosis of Patients

Since its inception the clinic has provided facilities to deal with problems of sexual deviation. Although there is a special orientation towards sexual offenders referred to the clinic by courts and probation officers, the clinic is also open to cases applying voluntary for treatment of sexual deviation. The following table shows the source of new patients and their referral percentage for the years 1959 and 1960.

Referral Source of New Patients	1959-%	1960-%
Courts	20%	16%

*The Ontario Provincial Government provides for most of the financial expenditures of the clinic. Some of the research is supported by funds from the National Health Grants programme, thus permitting employment of two full-time research workers this year.

**All the professional staff, other than the two research workers mentioned above, are employees of the Ontario Department of Health. Some members of the staff also hold university appointments, in the Faculty of Medicine, Department of Psychology, and School of Social Work.

Probation Officers	36%	36%
Private Physicians	6%	9%
Hospitals and Clinics	10%	11%
Community Services	16%	9%
Family and Friend	6%	4%
Self	3%	8%
Staff at T.P.H.	5%	3%

It is worthy to mention that 87% of the above court referrals were presentence cases indicating an increasing use of psychiatric examinations and reports in reference to the sentence of a convicted person, distinct from the use of psychiatric evidence in relation to the guilt of an accused person. It is also noteworthy to point out an increase of 3% referrals from private physicians over the year 1959.

In its relationships, particularly to the court and probation services, the clinic does not confine itself to sexual offenders. Other types of offenders are referred, both for examination and for treatment. They range from crimes of theft, assault, contributing to juvenile delinquency, to symptoms of mental illness, marital difficulties, aggressive urges, etc.

Objectives and Services

It is the opinion of the Forensic Clinic that psychiatric treatment can be used as an alternative to imprisonment and punishment in certain types and classes of offenders, as well as a prophylactic measure for criminal offence.[6] In order to accomplish this ideal, judge its efficacy, and procreate its acceptance, the following four services and functions are offered by the clinic: Diagnosis and Assessment, Treatment, Teaching and Research.

Diagnosis and Assessment

The immediate purpose of the Forensic Clinic, as intimated earlier is the examination, study and appraisal of cases as a pre-sentence service to the courts (mainly of Metropolitan Toronto, but also of any provincial court). However, the wide variation in referral sources has already been noted.

The clinic conducts a thorough appraisal, including full psychological testing, and investigation for possible organic disorder where indicated. The clinic offers to the patient a team approach: psychiatric social worker, psychologist, and psychiatrist. The function of the psychiatric social worker is to obtain a general history and biographical account of the patient during the patient's first interview at the clinic and thereby to assess the patient's relation to his social world. A second interview is then held, at which time the psychologist tries to assess how intact the patient is. These tests are aimed at the feasibility of psychotherapy, and include intelligence tests, projective tests, and tests bearing on the patient's relations to his or her parents. The third and final interview is with the psychiatrist whose task is to conduct a diagnostic interview from a symptomatic and dynamic standpoint. Finally the team members have an intake assessment meeting chaired by the psychiatrist as coordinator of the team, at which time the disposition of the patient is discussed. The diagnoses most commonly made are in the category of the disorders of character, behaviour and intelligence (International Statistical Classification). The suitability of the case for psychiatric treatment, and the methods of performing such, are then decided. With regards to the court, a report is then sent to the Magistrate, under terms of the Mental Hospitals Act, 1960, and suggestions as to disposal are included. The Magistrate may not be able to make use of these recommendations, but in fact he usually follows them (if the rest of the facts from the evidence he has heard are consistent with the recommendations).

"Besides the psychological and social service contributions to the clinic, several ancillary tests, such as an electroencephalogram and an X-ray can be carried out at the Toronto Psychiatric Hospital. Specialists in internal medicine, neurology and neurophysiology, and the consultant staff of the hospital are also available for specialized examinations."[7]

Treatment

Because the clinic is entirely an out-patient department, it can deal only with those individuals considered reasonably safe to be in the community and thus not requiring hospital treatment at the in-patient department or in a prison setting. Several types of psychotherapy are offered: (i) intensive, long-term psychotherapy; (ii) supportive therapy, short-term or long-term; (iii) brief psychotherapy; (iv) group therapy.

The clinic treats about 225 new patients each year; the latest file count available at date of publication of this article shows that 1258 patients have already received or are still actively receiving treatment. The majority of cases receive treatment on a once-weekly basis, their average length of treatment lasting for about a one-year period.

Sexual deviation forms the largest group of cases treated (about 40%). Those non-sexual cases which are accepted for treatment include offenders manifesting adolescent behavior disorders, psy-

choneurosis, impulse neurosis and character disorders.

Research

The bulk of the research carried out at the Forensic Clinic is in the line of sexual deviation, particularly concerning exhibitionism, pedophilia, and homosexuality. This group has been specifically selected for three reasons: it constitutes the largest group of court referrals, it raises more public concern than any other and the clinic, by policy, is especially committed to research in sexual deviation.

At present the published research carried out has been that done on an empirical basis. All data are collected and organized, and the results are a compilation of this. It is hoped to answer thereby the question — "which offender can benefit from psychiatric treatment with a reasonable assurance of success, with a minimum risk of repetition of criminal and deviant conduct, and with the least possible risk to the community."[8]

Teaching

A sound didactic and practical teaching programme is essential to the understanding of mental disorders. It is important that both the medical man and other disciplines and lay groups which have a contribution to make be versed in this respect. Some postgraduate physicians in psychiatry are assigned to the clinic for training for periods of six months. Teaching seminars are given to undergraduate medical students, utilising selected case material. In addition, teaching is offered to other groups, such as psychologists, social workers, probation offices, etc.

Case Presentation

In order to demonstrate the information presented in the previous sections, and to elaborate on the research programme of the clinic, an actual case history[9] will be briefly presented. A few of its particulars will then be compared with the empirical research findings of the clinic. The case in view is one of exhibitionism.

Case History

The patient under consideration is a 31-year-old married man, J.D., father of three children. He was charged with indecent exposure, and was referred by Magistrate's Court to the clinic for a pre-sentence report.

The patient came to the clinic with symptoms of chronic headaches, and alternating moods of depression and slight euphoria.

On examination the patient presented as a man very anxious, both on a psychic and physical level, and depressed. His thinking was clear and to the point. He was particularly concerned with a deterioration of memory; excellence of memory being something of which he had been very proud. He was preoccupied with thoughts of failure and inadequacy, and his indecisiveness worried him. He then retreated from an unpleasant situation rather than facing it. He had difficulty in expressing just how he felt. All these symptoms had resulted in depression.

The patient was born in Toronto and had remained in the area all his life. His parents were of Anglo-Saxon stock. His father was 20 years older than his mother. There was continued strife between mother and father, culminating when J.D. was age eight at which time his mother left the family. At this time J.D. became a ward of the Children's Aid Society for about one year, until his father remarried, again to a woman many years his junior and only ten years older than J.D.

His father was abusive and drank heavily; he was a rake and was involved with a number of women younger than he. The patient remembers being exposed to primal scenes on a number of occasions. In addition, J.D. was subjcted to his father's continual belittling of women, which tried to erase and destroy J.D.'s memory of his natural mother and to turn J.D. against all women. J.D. spoke of his father in terms of ambivalence: extremely powerful, agressive, but not entirely unsympathetic.

J.D. worked in his father's business until the age of 11, at which time his father closed the shop. At age 14, after completing Grade VIII education, the patient went to work to help support the family and his siblings. The father and all his siblings lived on the patient's earnings until J.D. married in 1952 when he was twenty-two years old.

J.D. came to marriage with the idea that sex was dirty and secretive. He had had premarital relationships but after marriage he felt quite guilty about it. In fact for the first two months he experienced failure to maintain an erection during coitus.

One year after marriage the patient opened his own business, where he did quite well. Unfortunately, fire in 1954 destroyed all his assets.

His present symptoms could be dated from the time of the fire; the urge to expose himself accompanied this disaster. (This followed two years of married life.) It was not until one year later that the urge became uncontrollable. He exposed himself to two teen-age relatives, his sister-in-law and cousin. Since that time he exposed himself fairly frequently, the object always being a girl between 16 and 20 years of age. He did not expect these teen-age girls to be shocked particularly, but rather hoped that they would take this as an invitation to fondle his genitalia or to comment

on the size of his penis. He was particularly prone to exposing when working by himself and feeling low and depressed. He related an episode that occurred while driving to work when he had a terrible compulsion to expose, so strong that he had to pull off the road until the attack passed. The latest known incident was his exposure prior to the day of admission by one and a half weeks.

The patient's symptomatology had started early in his life, the first great blow coming when age 8. He had retained strong feeling toward his mother and had suffered subsequently from this emotional deprivation. The short age span between J.D. and his stepmother had prevented him from re-establishing a satisfactory mother relationship. He had suffered from a deeply repressed hostility toward his father of which he had not been consciously aware.

The psychodynamics became fairly clearly elucidated with marked conflict of an oedipal type arising, of which J.D. felt considerably guilty in terms of his impulses of a sexual nature. He subsequently developed a good deal of castration fear and a passivity-obsessivity perfectionism. These were confirmed through psychological tests.

It was decided that J.D. was a good candidate for psychotherapy, and a report to this effect was sent to the Magistrate. J.D. was subsequently put on probation and assigned to the clinic for treatment.

The core of therapy centered around his ability to express aggression, and in addition, accept some rather strong sexual impulses. The clinic felt that J.D. had the necessary assets for deep, insightful psychotherapy, and it proceeded in this direction.

Individual therapy was commenced and continued for about 15 sessions. During this time J.D.'s anxiety decreased and he began to verbalize quite freely, little prompting being necessary. During this time his hesitancy about letting himself go and revealing himself and his personality to people, because of the feeling of being rejected, diminished considerably. In fact he sought some reading material that he could peruse with the idea of finding out that he was not unique in his difficulties and of gaining some reassurance in this regard. It was finally decided that J.D. was now able to talk about his problem with a group of men, and it was felt that he would do well at this. Group therapy was commenced.

During the next year and a half J.D. attended sessions with a group of other men with the same affiliation. These sessions were overseen by a therapist who guided the discussions. Each person was encouraged to discuss freely and criticize openly both his own situation and those of the others.

During this time J.D. made good progress, gained insight, made adequate adjustments in home-life and particularly towards his father. He operated more effectively at work. In the spring of 1958 he suffered mild depression with a recurrence of exhibitionistic urges, but these were worked out in the group situation. He still tended to control agressive acting out, even in the group, but he certainly became more argumentative.

By June of 1959 J.D. had made further progress, but with one temporary set-back. His wife asked what he would do if a friend of theirs were to make a pass at her. J.D. was impotent with dealing with the situation, and realising this at another level he became very depressed and nearly exposed. However, he resisted the urge.

By September, 1959, J.D. was ready for discharge. He controlled his own acting out exhibitionistic acts, and he no longer had urges to expose. By November his comments were: 'I now feel good and clean inside.'. At this time he was making plans to better his status and already was studying to achieve a higher grade of education. He knew that he could meet his problems without having to deal with them in a pathological way.

Comparison

Since his discharge J.D. has been followed periodically by the clinic. The follow-up studies[10] on exhibitionism in general, with which J.D. will be compared, are based on a group of 54 patients, 32 being classified as exposing to adults, 17 exposing to children, and 6 exposing to both adult women and female children. Unfortunately, only a few aspects can be briefly discussed.

The studies indicate that the act of exhibitionism is often committed in a way which makes detection easy, e.g., in a place with many people present, from a car, returning immediately to a car, or in a streetcar. The preferred method of exposing appears to be from the patient's own car. Whereas J.D. experienced one tremendous urge to do so while driving, he was able to control it. However, he was later apprehended after exposing to two women who were gardening in a neighbouring backyard.

The age of onset shows a bi-modal distribution, the two peaks occurring in the mid-teens and mid-twenties, the latter being of the greatest magnitude. The number of charges corresponds to this distribution. The clinic impression is that the onset seems to occur at a time when a strong relationship with a female with sexual (genital) connotations threatens the patient, such as the mother in the mid-teens and the wife in the twenties. J.D. falls into the second category.

Clinic statistics indicate that in most cases of exhibitionism the exposure of the genitals is the

only act engaged in, without further attempt at closer sexual contact. All that seems to be wanted is a reaction by the victim to the sight offered. J.D., however, admitted to a desire for having his genital fondled on some occasions. In addition, as with J.D. and some others, the urge to expose seems to come suddenly and irresistibly; in some others the urge increases gradually until it is stronger than the inhibitions.

Precipitating factors are vague and indicate simply some kind of frustration.

The victims are almost always strangers, ranging from eight years to almost any age. The victim may be a solitary person or a small group. J.D. falls into both categories.

The data show that the majority of the exhibitionists are engaged in trades, few belong to a profession or are involved in clerical work. The preferred occupation in business is in the sales field, although a number, like J.D., have attempted ownership in business or managerial positions but have not been able to sustain this. They are generally hard working people and conscientious, even compulsively so, but are very sensitive to criticism and easily upset if anything goes wrong.

Exhibitionists exposing to children record the highest percentage of recidivists. This group committed offences during as well as after treatment, whereas exhibitionists exposing to adult women had no sexual offences recorded after treatment. J.D. showed no recidivism.

Impressions

At present the Forensic Clinic is working at full capacity. The clinic provides new ways and more specific techniques to deal with the situation of sex offenders and other non-sexual offenders. It is the design of the clinic to recommend for treatment, to actively treat, to rehabilitate and correct whenever possible the deviant behaviour of criminal activities. And with each day there is an inimprisonment and punishment in certain types and classes of offenders.

The many statistical data available on criminality tend to indicate a general increase of criminal activities. And with each day there is an increasing recognition being given by those responsible for dispensing justice to those persons who offend against society as a result of mental and emotional disorder. It is hoped that soon there will be established not only more clinics where diagnostic assessment can be given, but also where treatment for specific psychiatric disorders can be performed as it is now being done at the Forensic Clinic, Toronto.

Summary

The historical development of the Forensic Clinic has been presented along with commentaries on the relationship of medicine to law. The referral source of patients was tabulated. The objectives and services — diagnosis and assessment, treatment, research, and teaching — were outlined. A case history of exhibitionism was presented and some of its findings were compared to some of the findings of the follow-up studies done at the clinic. The author's impressions of the clinic were then summarized.

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Aortic Stenosis

by A. Wm. Karr, 6T2

Aetiology

Aortic stenosis results from an obstruction to the blood flow in one or more of three major sites.[1,8]

Proximal to the valve[1]. Obstruction at the infundibulum, or outflow tract of the left ventricle may take the form of either a congenital fibrous tissue band, or an area of diffuse muscular hypertrophy which, during the height of systolic contraction produces an area of narrowing sufficient to raise the pressure within the ventricle. The latter condition has been termed idiopathic hypertrophic subaortic stenosis, and is diagnosed by left heart catheterization and left ventricular angiography.

Stenosis of the valve per se[2]. Here the most frequent cause is rheumatic heart disease. Valvular damage may also be a result of non-rheumatic infections, subacute bacterial endocarditis, or atherosclerosis. It is never due to syphilis[2] (cf. aortic insufficiency, resulting from syphilitic aortitis)[3]. Congenital stenosis or atresia of the valve is a rare cause[4].

Distal to the valve[5]. Occasionally a congenital constriction in the proximal portion of the aorta may be the site of stenosis.

Much of the following is pertinent in the case of all three aetiologic sites; however, this paper will consider primarily valvular lesions.

Pathology

The normal aortic valve ring measures 7 - 8 cm. in diameter. A narrowing to 5 cm. or less is enough to be clinically demonstrable and important[4].

The acute and chronic inflamatory processes of rheumatic disease result in narrowing of the valve lumen through adherence of the cusp margins, stiffening of the cusps by fibrosis and calcium deposition, and restricted movement of the cusps due to calcium deposits in the sinuses of Valsalva. This combination of conditions often results in aortic insufficiency, a frequent accompaniment of aortic stenosis which should always be looked for. As well, scarring and deposition of calcium around the coronary ostia produces obstruction to coronary blood flow.

Pathogenesis

Aortic stenosis is a chronic disease of long standing; hence the left ventricle has time to compensate for the increased work load. This produces the heaviest heart[2] found in disease*. Initially, by hypertrophy, the left ventricle is able to adapt to the extra work needed to push a normal amount of blood through the narrowed orifice. Eventually, however, the time comes when the ventricle is unable to push all the blood through — residual blood is left in the ventricle with each stroke, producing progressive dilatation of the ventricle. From left heart failure, there results a progression backward with increased left ventricular pressure, increased left atrial pressure, increased pulmonary pressure and pulmonary oedema, and ultimately right heart failure with decreased venous return and increased peripheral venous pressure.

Symptoms

Congestive Heart Failure

Congestive heart failure first manifests itself by shortness of breath on exertion, progressing to dyspnoea at rest. These episodes may be severe, consisting of massive flooding of the lungs with oedema fluid producing a cough productive of large amounts of blood-stained, frothy sputum, gasping, and cyanosis. As right heart failure sets in, hepatic congestion produces bloating with a feeling of fullness and aching in the upper abdomen, accompanied or followed by dependent oedema and ascites.[6]

Angina Pectoris

The explanation for this symptom is still somewhat obscure. A number of factors are believed to be involved, which include:

Relative anoxia of the heart muscle due to hypertrophy. The increased thickness of the ventricle wall, combined with the increased load upon it, is more than can be adequately supplied by the prevailing coronary blood flow. This is

* cf. "pure" aortic regurgitation, which produces the largest (and, according to White, the heaviest) hearts known[4]; and mitral stenosis, which casts the largest x-ray silhouette[2].

aggravated by the increased difficulty of oxygen diffusion through the thickened ventricular wall.

Absolute cardiac anaemia from reversed coronary flow during systole. The velocity of the blood flow through the narrowed valve must be immense in order to sustain normal cardiac output. This velocity is believed to exert a suction force upon the coronary ostia[2], following the Venturi principle, so that there is actual extraction of blood from the coronary arteries during systole (it is now believed that normally there is coronary blood flow during systole as well as diastole).

Arteriosclerosis. In older people this factor is often superadded.

Scarring and calcification of the coronary ostia (supra vide). Angina pectoris is an important symptom which is often overlooked because of the predominance of the more severe symptoms of cardiac failure; frequently it must be brought out by direct questioning. It often forewarns the physician of possible sudden death that would be otherwise unexplained. The cause of sudden death is usually severe cerebral anoxia which may be caused by the intrusion of calcium deposits in the septum, resulting in conduction block.[2]

Faintness or Syncope

Fainting occurs predominantly during exertion, from a temporarily increased heart rate with decreased cardiac output and resulting cerebral anoxia. Other mechanisms which have been suggested include hyperactive carotid sinus reflex and temporary heart block, but these have not been proven conclusively. Rarely, unconsciousness may be accompanied by a convulsion with incontinence.

Signs

Diagnosis of the classical text-book picture of aortic stenosis is not difficult. However, departures are frequent, so that the existence of aortic stenosis is often unsuspected until revealed at the autopsy table.[7]

Inspection. The pertinent signs noted on inspection include jugular venous distension, pitting dependent oedema, and ascites. A laterally shifted apex beat indicates cardiomegaly. These are late signs, heralding the appearance of congestive heart failure.

Palpation. A systolic thrill[2] is often felt over the base of the heart in the second right interspace, or over the upper or middle sternum. When found in conjunction with a systolic murmur in the same area, the two are almost pathognomonic of aortic stenosis (apart from congenital heart defects). Often the thrill is missed; it may only be felt when the patient sits up and leans forward, holding his breath in deep expiration. It must not be confused with systolic or other impacts of the chest, such as are found with hyperactive hearts or with thin chest walls.

Plateau pulse is a characteristic sign, which may be over-ridden, however, by the collapsing pulse of associated aortic insufficiency.

Relative bradycardia[2] is often present despite gross congestive heart failure. The pulse rate may be under 70 or 60 per minute, and unaccounted for by heart block or digitalis effect. The cause may be a hyperactive carotid sinus reflex, or related to the vagus apparatus.

Arteriosclerosis may be noted on palpation of the peripheral pulses.

Percussion. In the late stages, percussion of the heart borders will reveal cardiomegaly.

Auscultation.[26] *Murmurs.* A systolic murmur is present, classically heard best in the second right interspace, and having a loud, coarse, ejection quality. This is often the first sign to appear, and in the absence of other signs or symptoms may be misdiagnosed as functional. The murmur is often transmitted into the vessels of the neck. On phonocardiogram the murmur has a characteristic "diamond-shape" which may be a deciding factor in distinguishing it from the murmur of mitral insufficiency. Apical murmurs may also be heard, indicating the additional involvement of the mitral valve (although transmission of the aortic systolic murmur is often a confusing factor). An aortic diastolic murmur is often present, but without the peripheral signs of free aortic insufficiency.

Decreased or absent aortic second sound. This may be difficult to distinguish if the pulmonary second sound is loud.

The blood pressure is variable. In pure aortic stenosis, the systolic pressure is low, with a high diastolic pressure (e.g. 110/90), producing a small pulse pressure. However, wide variations result from the two major variables of aortic insufficiency and independent essential hypertension.

Laboratory Findings

The routine examinations discussed below, plus the history and physical examination, are usually

sufficient to establish a clinical diagnosis. In selection of patients for surgical treatment, more elaborate studies such as left heart catheterization, pressure pulse measurement, and dye dilution curves are used.[8]

Radiology. P-A views classically reveal an enlarged, boot-shaped heart, and may show calcification of the aortic valve. The latter finding is best diagnosed by fluoroscopy, in that the aortic valve moves downwards during systole, whereas the mitral valve tends to move upwards.[2] Calcification of the valve is usually a late manifestation, but is not rare in younger patients.

Electrocardiogram. The ECG shows changes of left ventricular hypertrophy, and less frequently, left bundle branch block and auricular fibrillation.

Basal Metabolic Rate. The BMR is sometimes increased, even in the absence of congestive heart failure, for reasons as yet unknown.

Prognosis

Aortic stenosis is a chronic disease lasting for many years. There are usually no symptoms until congestive heart failure sets in. Once established, however, the prognosis is grave; death usually occurs within one to three years after its onset.

Treatment

There is no specific treatment for aortic stenosis at the present time; surgical procedures of aortic valvotomy and replacement with the Huffnagle valve have had disappointing results.[6] The latter has now been discontinued, and research is in progress regarding the use of Teflon as material for an artificial valve.

Palliative treatment consists of keeping the patient's physical exercise well within the limits of his tolerance. Congestive heart failure is treated with the usual regimen of digitalis and diuretics. Vasodilators for angina pectoris such as nitroglycerine must be used with caution, due to the risk of further decreasing cerebral blood flow.

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ABSTRACT: *Carpal Tunnel Syndrome Associated with Myxoedema.* D. C. Purnell, D. D. Daly, and P. R. Lipscomb: Arch. Int. Med: 108, 5, p. 757 (1961).

This is a report of a series of ten myxoedematous patients with associated carpal tunnel sydrome studied over a two year period at the Mayo Clinic. Such an association has been previously reported, and the occasional occurrence of pain and paraesthesias in the hands of myxoedematous patients is recognized.

In nine of the ten cases electromyography was performed and in seven of these nine, a prolongation of the latency period of the median nerve was noted. Two of the patients had symptoms of sufficient severity to warrant surgical decompression, and in both of these, compression was found to be due to non-inflammatory synovial oedema. All the patients' neurological complaints improved on treatment with thyroid hormone.

From this data, the authors concluded that myxoedema may cause the carpal tunnel syndrome, probably through mechanical pressure of myxoedematous tissue within the carpal tunnel. The occurrence of paraesthesias the lower limb (much less frequent than in the upper) in myxoedema is still unexplained since no defect in nerve conduction in other peripheral nerves was found in this series. It is speculated that the pressure of myxoedematous tissue on the auditory nerve in its canal might account for the occasionally-seen impairment of hearing in myxoedema.

Myxoedema is a rare cause of the carpal tunnel syndrome, but this syndrome may be an important part of the picture in myxoedema (in three of the ten patients in this series, it constituted the presenting complaint).

A.F.D.C.

DIAGNOSTIC RADIOLOGY

by J. BREBNER, 6T2 and R. S. GILDER, B.A.

Explanation

Diagnostic Radiology will be presented in four issues of this Journal. Our aim is to stimulate and encourage students, in particular, to learn to read and make use of x-rays that they will one day be ordering and seeing. We hope that these prove to be a challenge to your diagnostic acumen.

This project is undertaken with the encouragement of Dr. A. C. Singleton, Radiologist-in-Chief, Toronto General Hospital and Professor and Head of the Department of Radiology, University of Toronto, and with the specific aid of Dr. D. E. Sanders, Assistant Diagnostic Radiologist, Toronto General Hospital, in selection and discussion of cases.

Figure 1. —

Case I. PA of chest in inspiration. This 35 year old male in good health had a sudden onset of retrosternal pain followed by a fainting sensation and dyspnoea. Physical examination revealed a respiratory rate of 35, pulse 100, B.P. 100/70, but was otherwise negative. Now look at Figure 4 for further radiological evidence of this man's disease. What is your diagnosis?

Figure 2. —

Case II. AP supine abdominal film. This 60 year old male complained of increasing size of abdomen and gradual loss of vigour for 6 months. On examination, there was a huge mass in the abdomen which was firm but not stony hard, and had a smooth lower border. It was non-tender and filled the lower half of the abdomen. The remainder of the examination was negative except that the patient was pale and had a one degree elevation of oral temperature. What is your diagnosis of this mass? For further aid, see Fig. 5.

Figure 3. —

Case III. PA of chest. This 32 year old female was referred for investigation of hypertension discovered during hospitalization of hypertension discovered during hospitalization for a recent confinement. What abnormalities can you pick out in this chest? Now look at Fig. 6 for enlightment!

Figure 4. —
Case I. PA of chest in expiration.

Figure 5. —
Case II. Retrograde pyelogram of left side.

Figure 6. —
Case III. Aortogram obtained by retrograde catheterization of the left brachial artery.

Figure 7. —
Case IV. Plain AP supine film of abdomen. Special case. This 80 year old female had intermittent crampy mid-abdominal pain for 10 days which became severe 12 hours prior to admission. In the Emergency Department she vomited twice. There was no haematemesis but she did give a history of vague epigastric distress for many years which she described as "mild indigestion".

Physical examination revealed a frail elderly woman with moderate abdominal distension, tympany, no tenderness, but hyperperistalsis and borborygmi. No organs or masses were palpable. On rectal examination, a firm rounded mass extrinsic to the rectum was felt. Temperature 99°F. Pulse 90. WBC 8,000. Haemoglobin 80%. What is the diagnosis?

Clinicopathologic Conference

Conference Number One

Edited by F. C. Coleman, M.D., and Leonard E. Wallace, M.D.,
Mercy Hospital, Des Moines, Iowa

These conferences are reproduced from The New Physician, a publication of the Student American Medical Association. We found these discussions to be instructive, interestingly written and challenging. We hope our readers will enjoy them and profit from the experience of the clinicians who prepared them. —Ed.

A 62-year-old white man entered Mercy Hospital with chief complaints of frequency, nocturia, and dysuria of approximately three months' duration. Three weeks prior to admission the patient was examined in the office of a urologist. The prostate gland was markedly enlarged with the enlargement being diffuse and the gland rubbery in consistency. The residual urine at this time was 60 ml. Urethroscopic examination was done at this time. The patient experienced a mild urethritis and prostatitis following this examination whch responded satisfactorily to therapy, and he was admitted to the hospital for a transurethral resection of the prostate gland.

There had been no serious or prolonged illnesses. There had been a mild hypertension which improved after a 15-pound weight reduction and no increase in blood pressure had been observed following weight reduction. There had been no previous operations.

Physical examination at the time of admission revealed a moderately obese white man who was alert, co-operative, and in no distress. He did not appear to be acutely or chronically ill. Temperature was 98.4° F.; pulse, 85/min.; blood pressure, 136/76; and respiration, 20/min. Examination of the head, eyes, ears, nose, and throat revealed no abnormalities. The lungs were clear to auscultation and percussion. The rhythm was regular; there were no audible murmurs. The abdomen was protuberant; no tenderness, organs, or masses were demonstrated. There was no evidence of abdominal or inguinal hernia. The external genitalia were those of an adult man. Rectal examination revealed the prostate gland to be diffusely enlarged, well encapsulated, and non-tender. The neuromuscular examination revealed no abnormalities.

Laboratory Data

Laboratory results the day after admission revealed: hemoglobin, 15.2 Gms.; RBC, 4,910,000; WBC, 6,750; differential leukocyte count neutrophils 65 per cent, lymphocytes, 30 per cent, eosinophils, 1 per cent, basophils, 2 per cent monocytes, 2 per cent. Bleeding time was 1 minute and capillary coagulation time was 4 minutes.

Urinalysis showed: reaction, acid; color, straw, cloudy; specific gravity, 1.022; albumin, negative; sugar, negative; microscopic examinations, 8-12 WBC/hpf, 1-3 epithelial cells/hpf.

VDRL and Kline flocculation tests were negative.

X-Ray Examinations

X-ray examinations of the chest three days after admission revealed the lung fields to be clear and the heart shadow to be normal. There was considerable osteoarthritis of the thoracic spine.

Intravenous pyelography revealed normal function of the kidney and normal appearance of the kidneys and ureters. The urinary bladder shadow was somewhat elevated and rounded. This was attributed to a filling defect in the region of the prostate gland. The bones were normal except for osteoarthritic changes.

An electrocardiogram revealed slight right axis deviation.

Clinical Course

On his third hospital day a transurethral prostatic resection was performed with saddle block and sodium pentothal anesthesia. The blood pressure during anesthesia remained stable at 130/70; pulse rate, 70/min.; and respiratory rate of 20/min. The patient's immediate postoperatively the indwelling catheter was removed, and the patient was voiding. On the fifth postoperative day the patient attempted to get out of bed and collapsed to the floor in a sitting position. The blood pressure at this time was 170/96. Two hours later the blood pressure was 130/76. Tendon reflexes at this time were hypoactive. Seven hours after collapse the deep tendon reflexes were absent, and there was almost complete motion loss in all four extremities. Cremasteric and abdominal reflexes were absent. There was loss of position sense in the lower extremities, vibratory sensations were main-

tained. The Babinski reflex was absent. One hour later the blood pressure was 80/0. The abdomen was somewhat distended, the skin cold and clammy. The patient experienced respiratory difficulty and was placed in a respirator. The patient became comatose; cardiac activity became irregular and he expired nine hours after collapse, on the sixth postoperative day.

Clinical Discussion

Paul From, M.D. (Department of Internal Medicine) : Since the protocol has been presented, I won't go through it in its entirety, but basically, this is a 62-year-old man who had symptoms of prostatism with residual urine, and this evidentally was thought to be due to benign prostatic hypertrophy rather than carcinoma of the prostrate.

In a physician's office he had a catheterization which was followed by infection with fever, urethritis, and prostatitis, and this episode of infection preceded his death by about three to four weeks.

The other pertinent point in the past history that we know is that he had had a very mild elevation of blood pressure which responded to weight loss.

At the time of his admission for his transuretheral resection for his original complaints, his lungs and heart were normal, the blood and urine studies were essentially normal. The serological test for syphilis was negative. Mention is made in two x-ray studies that there is a considerable degree of osteoarthritis of the spine, but no other abnormalities of the spinal column. His bleeding and clotting times were normal, and there was no evidence from the differential count of any leukemic processes.

For the transuretheral resection he had a saddle block anesthetic. During the time of the anesthetic he did not have a rise in blood pressure. Pheochromocytoma is sometimes diagnosed unsuspectedly because during the stress of anethesia there may be a sudden rise in blood pressure. Also, just as important, there was no drop in blood pressure during this man's surgery.

His postoperative course was satisfactory until the fifth postoperative day when things suddenly began to go wrong. Now there has been reported intravascular hemolysis of blood cells with transuretheral resections of the prostrate due to absorption of water from the bladder. You know you put water into the bladder and it will hemolyze the blood cells. This will get people into difficulty because of the hemolytic phenomenon, but I don't think he would have this on the fifth postoperative day. At this time, after a very good course he very suddenly and without any pain had a collapse of some sort. At first there was a slight elevation of his blood pressure above his usual level, and his deep reflexes were at first decreased. Within seven hours he was paralyzed in all extremities, within eight hours he was in shock, within nine hours his heart was irregular, he was having difficulty breathing, and he died.

He died within nine hours of the time of the onset of some accident to his body, probably to his nervous system because he had a quadraplegia. So what we are faced with, in retrospect, in trying to figure out what happened to this man, is that he had a very sudden onset of an illness without pain. He had a paralysis which, one is led to believe from the protocol, extended from the lower extremities to the upper extremities and to the intercostal muscles. This paralysis was flaccid and was associated with loss of the deep reflexes, and I assume the loss of deep reflexes in both arms and legs, and also loss of superficial reflexes which is important. There may have been some impairment of sensation. The position sense of the limbs was lost, but there is no mention that vibratory sensations were present. There was ileus, that is abdominal distension, but there was no pathologic or upper motor neuron reflexes. And whatever he had ended in death.

First of all, let us consider the anatomy of a spinal cord. There are white matter and gray matter, and the central canal. The gray matter is composed of nerve cells and crossing fiber tracts. The white matter is basically fiber tracts and no neuron cells. What we are concerned with is that this patient had a lower motor neuron type of paralysis. We know that motor neuron cells to the muscles arise in the anterior horn cells of the spinal cord. We know also that he had some loss of proprioceptive sense and loss of sensation, but not vibratory sensations. So whatever he has must be affecting, primarily the anterior horn cells if the disease is limited to the spinal cord.

Well, let us quickly run through what some of these kinds might be.

Again, I state, there was an absence of pain and an absence of any signs of fever. He had a very sudden onset of an ascending paralysis. Now, this I think would have to involve the anterior

horn cells because the paralysis was flaccid, and he had no pathologic reflexes. In order to get upper motor neuron signs, you have to have involvement out in columns where the fiber tracts of the brain or pyramidal tracts come, and this man didn't have any. He had something that was involving his cord quite oddly, if the sensation tests were done correctly, that is, if he had a process in the anterior horn cells.

Now, what could involve the anterior horn cells only? Well, poliomyelitis is probably the most famous disease process that can involve the anterior horn cells and give you a flaccid paralysis. Usually, since this is an infectious disease, there is fever; usually it starts with some signs of meningitis; none of which this man had. The paralysis could certainly ascend or progress, but more often than not it does so in an asymmetrical manner rather than a symmetrical manner. I inferred that this just progressed right up his legs and arms. In order to die from poliomyelitis as such, usually you have to involve the bulbar portions of the brain, and with such involvement you should have difficulty in talking and swallowing since these cranial nerves originate in the bulb. These, the man didn't seem to have; he had only trouble in breathing. Now, he could, of course, have had bulbar trouble, and it not be picked up in the rush. He might have aspirated something, but even with an aspiration pneumonia unless you would drown from the aspiration, you shouldn't die that quickly. So, I doubt if he had poliomyelitis.

Meningitis is possible, and if the meninges are involved with some infectious process, the process can get to and involve the anterior horn cells. But again, he didn't have any evidence of meningitis, so I think meningitis, including tuberculosis meningitis, would be unlikely.

He could have had a phenomenon known as familial periodic paralysis. But this usually clears up, and it doesn't end in death. Its paralysis is more total in its onset rather than progressive. What he really seemed to have was a phenomenon we call Landry's acute ascending paralysis; that is, he had the ascending paralysis of a Landry's type but not due to a viral disease. I mean there is no such specific entity and Landry's acute ascending paralysis is only a syndrome, a collection of symptoms and diseases. It can be seen basically in poliomyelitis or encephalomyelitis, but any ascending paralysis could be of the Landry's type. The type associated with infection usually takes about four to 10 days for the paralysis to ascend from feet to arms, and it usually ascends into the bulb just as poliomyelitis would and this case had much too rapid a course.

There is a condition known as myelitis that is not impossible, and could certainly be discussed in the differential diagnosis. This very commonly is seen in the thoracic cord although it could be seen in the cervical or the lumbar area. If the entire cord all the way across is involved in this myelitic process, we call it transverse myelitis. If only one-half of the cord is involved, we call it myelitis of the Brown-Sequard type. Usually this would give you, if one-half were involved, paralysis on one side of the body with loss of pain and temperature sensations on the other side of the body since these fiber tracts cross, and they would be out and usually the pain and temperature at one level lower than where the paralysis is. But either type would be myelitis, complete, transverse, half the cord, Brown-Sequard type, or any kind of a spotty fashion would be all right. If it is due to infection, we usually speak of it as myelitis. If it is due to some vascular accident or trauma,

PARKE-DAVIS MEDICAL WRITING PRIZE

The editorial staff of the University of Toronto Medical Journal takes pleasure in announcing a new prize for undergraduates, who contribute to this Journal. The conditions follow:

1. The prize shall consist of $300.00 and a plaque awarded annually in the month of April.
2. All undergraduates enrolled in the University of Toronto Faculty of Medicine shall be eligible for this prize with the exception of the Editor-in-Chief of the University of Toronto Medical Journal.
3. A committee of professors and teaching staff of the Faculty of Medicine shall make a yearly recommendation to the Parke-Davis Company, as to who the winner for that academic session shall be.
4. The prize shall be awarded to the student who, in the opinion of the selection committee, has contributed to the University of Toronto Medical Journal, the article that combines the best use of the English language with the best effort in preparation. Evidence of careful examination of the medical literature about the topic selected by the student shall be an important criterion. Reports of research conducted by the student himself will be acceptable and favourably considered.

rather than myelitis, it is spoken of as a myelopathy. This could be from an embolus, or a thrombosis, or something like that. The inflammatory type usually is associated with some other infectious disease, such as measles, scarlet fever, diphtheria, influenza, erysipelas, varicella or chicken pox, pneumonia, pertussis or whooping cough, or endocarditis. It could be due to a spinal cord abscess. It could be due to syphilis. It is sometimes seen in pregnancy or right after delivery, or in association with diseases of the genitourinary tract. It could be from aneurysms of little veins, or arteries along the spinal cord, or an aneurysm of the aorta causing some pressure against the cord or loss of blood supply to the cord. It can be seen with diseases of the bones, from meninges with tuberculosis, for instance. Usually though when people have myelitis, or myelopathy, they have some mild degree of fever, and some slight pain, and some paresthesias or tingling in the extremities. If it is some extreme process, they usually involve all of the spinal cord, a transverse myelitis, and with this, since they pick up the ascending tracts, they have upper neuron signs, Babinski signs, and we are told that this man did not have a Babinski sign.

Beginning Symptoms

At first, with this type of myelitis, or myelopathy, all the reflexes are gone; then as the spinal cord shock wears off and the upper motor neuron findings begin to predominate, the reflexes then become typeractive and the paralysis is other than that of the flaccid type. Sensation in all forms, if it is a complete transverse myelitis, should be lost below the level of the involvement.

In the cervical cord, if this happened up in the cervical cord, the arms are usually flaccid, but the lower extremities are spastic, and you have sensory impairment in the arms and chest. If it is very high in the cervical cord — just below the bulb — you can have paralysis of the diaphragms which this man seemed to have. However, since he didn't have any fever or pain, etc., I think that myelitis in itself is out, especially a transverse myelitis, but we can reserve some kind of myelopathy as possibly being present.

Another possibility would be multiple sclerosis. The age, however, is against it. This was an extremely rapid process from onset to death for multiple sclerosis. He could have had a compression in his spinal cord, something pushing the cord. A tumor might do this, but this should have a slow and somewhat painful course. Painful because they get radiculitis where the nerves leave the cord just as a person with a prolapsed intervertebral disc. Whenever they do anything to increase the pressure within the spinal cord, they experience radiating pain which this man didn't seem to have. He could have occluded his abdominal aorta and not been able to get any blood to his spinal cord, but this wouldn't really explain why his arms became paralyzed because it is expected to be just from the level of involvement and below. There was no mention of absent pulses in his legs such as in the femorals or the popliteals. There was no evidence of any erosion of bone in his spinal column from the x-ray studies that were made, so I doubt that he had an aneurysm of the abdominal aorta or any atherosclerotic process that occluded itself.

He could have syringomyelia of this central canal in which a great deal of cystic fluid is elaborated, and this swells and causes an atrophy of the cord wherever it puts pressure against the cord. These people usually first lose pain and sensation and they burn themselves very easily and get gangrene. Only later do they demonstrate motor disturbances, and we don't have this history. I don't think there has ever been a case described where the central cord would swell up and cause a myelopathy within seven hours.

He could have had a tumor of the spinal cord, either an intramedullary tumor, that is, within the cord, or he could have had an extramedullary tumor, that is, one outside the spinal cord itself. If he had the extramedullary tumor, again he should have radicular pain which he didn't have. With intramedullary tumors unless you have pain, you don't suspect such a condition, but it is not nearly as likely to be associated with pain as is the tumor that is pressing from without. Again, this is a slow process and it takes weeks and months before this could be diagnosed, so I doubt if this is it.

There are many kinds of tumors that could have been involved here. If it were a tumor of the spinal cord, the meningiomas, as we know, are the best kind to have as they may be removed and cured. Others include fibroblastomas and neurofibromas, sarcoma, lipoma, gliomas. It could be a syphiloma, or a tuberculoma. It could be a lymphosarcoma pressing against the cord. These things may be seen in leukemia with infiltrations, or with multiple myeloma, especially with pressure caused by a big myeloma tumor pressing against the cord. Here again, these are associated with pain, and this man had no pain.

Tumors of the spine would be a possibility. We thought that he had a benign prostate. Tumors of the spine are usually metastatic, so I doubt if he had this.

An abscess of the spinal cord, we have talked about. It has been known, by the way, that metastatic tumors of the spine are often associated with thromboses of the spinal cord vessels, so this would be something to keep in mind.

Abcess of the spinal cord is not diagnosed without fever and chills, neither of which he had, and injury to the spine would be possible just cutting across it with a spicule of bone, or transecting it with a dislocation of the vertebrae, but I would infer from the protocol that something happened to him and he then fell to the floor rather than that he fell to the floor and then injured his spine.

This brings us to one other large category as to why he might have had a myelopathy, and this is in the phenomena of vascular diseases. Certainly he was in the right age group. He was a man in his sixties. He could have two or three possibilities if he had some type of vascular accident, such as an embolism, a thrombosis, or he could have some bleeding disease phenomenon that would lead to it such as scurvy, or thrombocytopenia. If this happened, however, you would likely have a hematomyelia, bleeding into the spinal cord substance. This can be associated with a flaccid paralysis, paralysis of the bladder and sensory disturbances. He could have had a subarchnoid hemorrhage of the cord, or an extradural hemorrhage of the cord. Again pressure phenomenon usually are associated with pain, and he didn't have that.

There is one other possibility and that is along the anterior part of the cord where there is an artery called the anterior spinal artery which basically supplies the anterior horn cells or at least that portion of the cord. If a person thrombosed this anterior spinal artery which is a known phenomenon, he might set up this sort of thing getting a flaccid paralysis. In favor of this diagnosis is the fact that thrombosis of the anterior spinal artery comes on spontaneously; it is seen with arteriosclerosis or syphilis. Since his Wasserman was negative, we assume that he had arteriosclerosis. Because he had no signs of fever, no history of trauma, and because he had a spontaneous onset with a flaccid paralysis of the anterior horn cells, I think that the most likely thing is that this man had a spontaneous thrombosis of the anterior spinal artery.

Clinical Diagnosis

Thrombosis of anterior spinal artery.

Pathologic Discussion

Brian P. Geoghegan, M.D. (Department of Pathology): Thank you, Dr. From, this patient did have atherosclerosis. Sections of the spinal cord showed marked degenerative changes, myelomalacia not associated with an inflammatory process and necrosis. Thrombosis of spinal arteries are difficult to demonstrate at autopsy. Branches of the spinal artery enter the cord at right angles to the cord and may not be visualized either grossly or microscopically. In our sections an artery was occluded with thrombus and the changes in the spinal cord were those of infarction. It was our opinion that this was secondary to thrombosis of the anterior spinal artery.

Pathologic Diagnosis

Infarction of spinal cord secondary to thrombosis of anterior spinal artery.

Note: Arteriosclerotic changes in the spinal blood vessels, while common in elderly people, rarely are the cause of actual pathological lesions in the spinal cord. According to H. Houston Merritt, Professor of Neurology at Columbia University's College of Physicians and Surgeons (writing in Cecil and Loeb's *Textbook of Medicine,* one of the few textbooks that even mentions the condition), "Thrombosis of spinal vessels as a result of arteriosclerotic changes is a clinical rarity. Senile or arteriosclerotic paraplegia has been attributed to spinal lesions, but it is more probable that the symptoms in such cases are due to vascular lesions in the brain."

Clinicopathologic Quiz

1. What is the most common cause of thrombosis of spinal vessels?
2. What is a common cause of *embolism* of the spinal vessels?
3. What usually follows occlusion of the anterior spinal artery or one of its main collaterals?
4. What are the most common, pre-existing diseases that cause thrombosis of the spinal vessels?

Answers to CPC Quiz:

(1) Secondary to an inflammatory reaction in the meninges or is due to compression of the vessels by tumors, granulomas, and abscesses in the epidural space.

(2) Caisson disease.

(3) Softening of the spinal cord.

(4) Syphilis, tuberculosis, or following the intraspinal injections of anesthetics, serum, Lipiodol, and drugs. The most common occluding tumors are: metastatic tumors or Hodgkin's granuloma.

Diagnostic Radiology

Diagnoses and Discussion. Answers from pages 88-9

Case I — Left spontaneous pneumothorax.

This case illustrates the difficulty of perceiving radiological evidence of an apical pneumothorax on inspiratory film alone. In Figure 1 (reproduction allowing), there is a slightly more translucent area in the left apex of the lung and the upper edge of lung may be seen crossing the first rib. In the expiratory film (Fig. 4) the upper border of lung and the apical pneumothorax on the left side is much more obvious.

Due to the inherent elasticity of the lung and the absence of contact of the two pleural surfaces, the pneumothorax is always much more easily demonstrated in the expiratory phase. Small pneumothoraces are commonly not associated with a detectable change in percussion note or other physical signs.

Idiopathic spontaneous pneumothorax is a spontaneous pneumothorax occuring in the apparently healthy. This form occurs most frequently in the age 20 - 40, more often in males, and more commonly in the right lung. Rupture of an emphysematous bleb on the visceral pleura is usually the cause. These blebs may result from a congenital defect or more likely from the effect of a valvelike obstruction of a small terminal pulmonary subdivision caused by the healed scar of a previous infection. With this mechanism established, sudden strains or violent coughs could be expected to rupture the bleb.

Case II — Gross splenomegaly due to aleukemic leukemia.

The AP supine abdominal film (Fig. 2) shows the extent of the soft tissue mass in the left abdomen. The renal outline is not visible on this side. Intravenous pyelogram showed absent function in the left kidney.

Retrograde pyelography (Fig. 5) shows the interesting effects produced by this massive splenomegaly:

(1) The large intraperitoneal spleen has displaced the retroperitoneally located kidney. This is an unusual effect especially since there were no adhesions between peritoneum and spleen. The kidney here is displaced medially and downwards.

(2) Interference with renal function due to the pressure of the spleen and probable compromise of its blood supply.

(3) Obliteration of the psoas muscle shadow, usually found only with retroperitoneal abnormalities.

(4) Lumber scoliosis produced by the encroachment on the spine of a space occupying lesion of these proportions.

Case III — Coarctation of Aorta.

In Fig. 3 (PA of chest) one would note in the routine examination of the bony structures of the chest that there was considerable notching of ribs bilaterally. This should lead one to suspect dilatation of intercostal arteries since the notching is on the inferior aspects of the ribs and tends to be more medial (where presumably he greatest diameter of the arteries would be). Dilatation of intercostal arteries implies increased pressure due to blockage or stenosis lower in the aorta and so we have coarctation of aorta and hypertension fitting in.

Fig. 6 is an aortogram obtained by retrograde catheterization of the left brachial artery. In this view one can see clearly the grossly dilated intercostal arteries and the notches which they have eroded into the inferior aspects of the ribs. The aortic arch is small and there is a very extensive collateral arterial circulation.

Case IV — Gallstone Ileus.

The film (Fig. 7) shows a calcified ring shadow, the gallstone, low in the pelvis just below the sacral outline and to the right of the midline. The calcification is faint. Several gas-filled, dilated loops of small bowel can be seen proximal to it. Gas-filled small bowel is differentiated from colon by the smaller lumen and the loops which are irregularly placed in the abdomen and pelvis.

The clue to the cause of the obstruction, however, is the presence of gas in the gall bladder high in the right upper quadrant. Its outline is typical. The presence of gas in the gallbladder indicates a fistula into the intestinal tract from which the stone has passed into the small bowel and become lodged in the terminal segment of the ileum. This is the usual location for such obstruction to occur and leads to ileus. The radioopaque duodenal tube can be seen high up in the film. Duodenal tubes are used as a rule for relief of gaseous distension of small bowel due to ileus.

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